NINETEENTH ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH

OF ONTARIO

FOR THE YEAR 1918

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

Printed and Published by T. E. Cameron,
Printer to the King's Most Excellent Majesty

NINETEENTH ANNUAL REPORT

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OF ONTARIO

BEING FOR THE YEAR

1900.

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NINETEENTH ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH.

INTRODUCTION.

TORONTO, March 31st, 1901.

To the Honourable SIR OLIVER MOWAT, K.C.B., *Lieutenant Governor of Ontario.*

MAY IT PLEASE YOUR HONOUR:

The Provincial Board of Health desires herewith to present for your approval its Annual Report for the year 1900, being for the eighteenth year since the Board was organized.

It gives the Board much pleasure to inform you that the public health of the Province at the close of the year and the century is such as to give cause for great thankfulness on the part of our people to the Giver of Good, and of much satisfaction on the part of your Government, who have shown a constant interest in the welfare of the people. The Province has for so many years been free from the ravages of any of the great death-dealing epidemics, which in the earlier years of immigration and settlement in Canada were not infrequently occasioned by invasion from foreign countries, that we have become forgetful of the superior privileges we in Canada enjoy in matters of health, and do not fully recognize what valuable social and economic advantages accrue to every State where the people live on a high plane of general comfort and do not have their vitality lowered and their financial energies exhausted through the prevalence of fatal communicable diseases.

The year has, however, been marked by the presence of smallpox at several points in the Province, which, had not promptness marked the action of the local health authorities, would have occasioned most serious results. The outbreak in Essex of a mild type at the beginning of the year was suppressed, but only after a notable expenditure by the local authorities, while in May an outbreak, the details of which are given in Part II. of this Report, due to an undiagnosed case imported to Winnipeg from the Orient, of such virulence as to virtually create a panic, occurred at various points along the line of the Canadian Pacific Railway, as Port Arthur, Fort William, Sault Ste. Marie, Wolf River, Arnprior and Carleton Place. The action of the Local Boards of Health at every one of these centres was such as to limit the outbreak to the second series of cases, and proved equally the intelligence of our people in readily submitting to vaccination in the

presence of grave dangers, and of the perfectly protective value of vaccination in the presence of a type of disease so severe as to result fatally in some 50 per cent. of all attacked who had not been vaccinated.

The present year, 1901, whose first quarter's reports are herein included, finds the Province face to face with the most extended outbreak of smallpox which has appeared since 1885. The mildness of the type is similar to that which has been present in most parts of the United States during the two past years, whence the first cases were introduced, *via* Sault Ste. Marie, into our lumber camps.

The presence in the large area between Georgian Bay and Sault Ste. Marie and the main line of the C.P.R. from Sudbury northward of hundreds of lumber camps and thousands of workmen made the situation extremely serious; so serious indeed that the Provincial Board of Health has had to undertake the personal supervision of the whole district, has instituted an inspection of all trains going eastward to Sudbury and has established an isolation tent hospital, which at the time of writing has over 100 smallpox patients and suspects.

Fortunately the mortality has been unusually low and the Province has been saved the loss of hundreds of valuable lives ; though this very fact of a mild type of disease has made the task of early diagnosis and prompt isolation extremely difficult for the various local health authorities.

Outbreaks of the several other communicable diseases do not call for any special remark, as they have with the exception of typhoid shown on the whole a lessening tendency, and the total mortality from them has been very low as compared with a few years ago. This fact is attributed by some to the mild type of the disease ; but this is most probably due to the few instances where a first case is allowed, as in diphtheria, to become severe through failure in diagnosis, as where a physician is not called in, thereby setting up a more severe type as may be proved by experiment in the bacteriological laboratory.

The intimate dependence of typhoid upon meteorological conditions has not in recent years been better illustrated than in 1900. As will be seen in the report of the Committee on Contagious Diseases for the 4th Quarter, this matter is referred to at some length. There was an exceedingly hot and dry period in August followed by an autumn of unusual mildness with an excess of rainfall, yet with a very prolonged period wherein a still air with pleasant, sultry weather made a practically saturated atmostphere promotive of organic decay and, as has been pointed out, an unusual period during which well-waters were not only scanty, but continued at an unusually high temperature. Thus the usual autumn maximum of mortality from this disease extended even more and into November and December. The excess of deaths from this cause in rural districts and towns and villages not yet supplied with waterworks make the desirability of some more direct means of bringing information on the subject of polluted farm wells and pure water to the attention of these classes in the community.

The most serious problem, however, which the Provincial Board of Health in common with other health authorities has before it is that of lessening the prevalence and mortality due to pulmonary Tuberculosis. Various special reports dealing with this matter will be found printed in Part II. as will also the "Act relating to the Establishment of Sanatoria for Consumptives" passed during the year by the Legislature. The unanimity with which your Legislature adopted the various provisions of this Act shows

how wide-spread the belief in the preventable character of this disease has become and how ready the people are to support organized effort to suppress the disease and to aid in the care of those already infected. What seems especially required is local effort supported by personal interest and individual generosity in giving a positive direction to the legislation for the establishment of such county sanatoria. Were the Board in a position to give the time of its secretary or members to the work of developing local activity there can be no doubt that more rapid progress would be made.

The growing utility of the laboratory attached to the Provincial Board is fully illustrated in the report of the bacteriologist printed as a part of the report proper. There is not only a steadily increasing recognition of the assistance it gives to physicians in the diagnosis of obscure cases, but also a notable desire on the part of Medical Health Officers and Local Boards of Health to utilize the laboratory as an aid to them in making isolation of disease a routine matter, and in preventing the too early discharge of convalescents from quarantine. The many diseases in which physicians and Local Boards of Health are supplied with information are fully illustrated in the report referred to. What, however, is urgently needed is both an increase in the staff of the central laboratory for doing research work, and the development of county, or at least, district laboratories, whereby the work may be still more developed in extent and usefulness.

The report for the year closing the century naturally makes a retrospect of public health conditions an attractive subject. The publication, however, of the Presidential address of the American Public Health Association, prepared by our Secretary who held that honorable position for 1900 makes it unnecessary to do more than remark that in all the progress which has marked the century now past there has been none more notable than the evolution of Scientific Medicine and the placing it on a plane side by side with the exact sciences, which are based upon the immutability of law and the exact relationship and correspondence between cause and effect in the sphere of disease.

We trust that the century now entered upon will make yet more complete and practical the conclusions founded upon the principles of Preventive Medicine fixed so securely in the past on an enduring basis.

I have the honor to be,
Your obedient servant,

HARRY S. VAUX,
Chairman.

ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH.

REPORT OF THE SECRETARY.

CHAPTER I.

Your Secretary begs leave to report that the end of the year 1900 and the end of the century finds the Province enjoying in a large degree freedom from the preventable diseases which your Board is called upon to deal with under the Public Health Act. The continued relative freedom of Ontario from communicable diseases has been so ordinary a matter of reference in your late annual reports that we might naturally be led to conclude, if comparison of the present with the past were made, that climatic conditions have so changed that this class of disease now finds the soil in this Province no longer congenial for their development. Reference has in past years been made to the very remarkable decrease in the communicable diseases with which we are familiar. The Registrar-General's returns for 1899 give the following :

Deaths from Communicable Diseases in Ontario in 1899.

Population.	Influenza.	Smallpox.	Scarlatina.	Diphtheria.	Measles.	Whooping Cough.	Typhoid.	Total.
2,302,705	990	7	246	599	40	124	452	1,468

To this may further be added the monthly returns from 93 per cent of the population to the end of 1900.

TOTAL DEATHS FOR THE PROVINCE OF ONTARIO FOR YEAR 1900, AS REPORTED MONTHLY TO THE PROVINCIAL HEALTH OFFICE, 25,382, OR 11.9 PER 1,000. AVERAGE POPULATION REPORTING, 93%.

The following Table shows Deaths from Contagious Diseases.

Scarlatina.	Diphtheria.	Measles.	Whooping Cough.	Typhoid.	Consumption.
133	486	93	121	550	2,360

Deaths from Contagious Diseases by Months.

	Scarlatina.	Diphtheria.	Measles.	Whooping Cough.	Typhoid.	Consumption.
January.....	13	51	2	4	16	183
February.....	14	39	7	3	13	186
March	23	34	22	7	16	188
April	15	24	27	11	9	203
May	8	27	13	8	15	239
June	6	30	1	7	11	200
July	9	44	9	7	15	264
August	8	31	1	14	44	180
September....	3	42	2	20	58	172
October	8	44	2	10	120	169
November	12	50	3	20	141	161
December	14	70	4	10	72	215
Total	133	486	93	121	550	2,360

Total Deaths per Month.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1,771	1,962	2,330	2,311	2,162	1,752	2,021	2,371	2,490	2,056	1,984	2,172	25,382

These results are especially gratifying as a mark of the scientific progress of the century just closing, and have before been illustrated in many ways. Comparative statistics for Ontario are not available with one hundred years ago, when there were not in all Ontario more than 30,000 people who had so recently settled and were so widely scattered that no records regarding disease are obtainable In fact the few historic details of the time have to do rather with the immediate needs of a people settling in a primeval wilderness whose annual town meetings were limited to discussing how high the rail fences should be for keeping the cattle in check and the size of the yoke which the hogs running at large as commoners should wear. But all this is not surprising when the hardy life of the pioneer and the absence of towns made life in the open as healthful as possible, and moreover the time had not arrived even in Europe when the prevention of disease was either understood or seriously attempted. Reference to the position of Public Medicine during the past century has been referred to at length in a recent pamphlet issued by the Board, in which is indicated how in England the last fifty years saw the dawn of Public Medicine as a systematized branch of Government effort, while not till the last quarter of a century had the science of medicine advanced to that point where the causation of many diseases began to be looked upon as demonstrable as a proposition in Euclid. *Omne vivum ex ovo* is a dictum which began to be accepted by scientific men only at that time, and while the term *materies morbi* existed, it really was a term used to recognize the existence of a cause, but when or what that cause was had not been positively determined.

Even many who have lived through the period during which these changes have taken place fail to recall fully the stepping-stones of their own progress So many illusions appeared that it seemed hopeless to expect the existence of a reality in this matter of contagion. And yet the process has been very rapid since the moment when the feet first felt solid ground. It is almost within the history of your Board that the first progress was definitely announced. But while the cause of tuberculosis was only tentatively given to the world in 1882, the year when your Board came into existence, though diphtheria as a microbic disease was only suspected in 1887, while the typhoid germ was differentiated about the same time, and though scarlatina, smallpox, whooping cough and measles have yet to have their specific cause fully demonstrated, yet the principle, *omnis cellula à cellula* of Pasteur had in 1876 been definitely fixed as a fundamental principle of life, and for practical purposes your Board with other health authorities has, since then, had data of so positive a character, that it has been enabled to put in practice those practical sanitary

measures which, to some extent existing before, were henceforth to be based upon scientific facts regarding which there could no longer be any serious question.

And no sooner was your Board organized than it had an opportunity of putting its beliefs into practice. During the very first session an outbreak of smallpox in Windsor demanded action. The town medical officer demanded that in the interests of the public, all patients rich and poor alike should be removed to the so called pest house. The order was made and the isolation of patients, the quarantine of suspects carried out, and final disinfection performed with the same thoroughness, if not with the same confidence regarding results as to-day.

Again, the town of Sarnia had at the same time a severe epidemic of typhoid. The germ of the disease had not been discovered but observation had associated outbreaks with water-supplies. On investigation it was found that a sewer emptied its contents into the St. Clair River at a point where contamination of the drinking supply was inevitable, and while no counting of bacteria in the water was yet practised, yet it was possible to discriminate between pure river water and that contaminated with town sewage by the excess of chlorine in the latter. Other cases might be cited, such as the positive opinion gained from observation and experience that foul air in gaols, hospitals and similar institutions meant a high mortality, and that a simple way of measuring its impurity was by the amount of carbonic acid in the air which could be estimated.

Indeed a review of the annual reports of those earlier years of the Board's work shows that there was then a fixed belief in the existence of causative influences which, with a very acute sense of the needs for improvement, gave to the Board's work an agressive character, which recent years have seemingly tended somewhat to decrease as the evils to be combatted have become gradually less. Then the work and workers were as the apostles of a newly found faith, and the number of subjects dealt with by the Board will be found surprisingly large by those caring to examine those old reports. To-day, sanitation has come to be taken as a matter of course, and the distinctly personal character of many of its precepts has to a notable degree been lost. To day the public have relegated it to the public health officials much as the religious and secular instruction has on the part of parents been too largely turned over to the clergyman and the teachers of our schools. The process has perhaps been a natural and inevitable one, but the results are apparent. The sense of personal responsibility in matters of health, as of education and religion, has become distinctly lessened, and when untoward events occur, some one,—of course not oneself—is to be blamed. The condition is illustrated in many ways. Thus a hundred years ago vaccination had been demonstrated to be a scientific discovery, which during a century has rendered possible the almost complete elimination of smallpox from our bills of mortality. Now that the danger is not present with us, as it was then, a notable number of people have been led to believe that it is useless, unnecessary, and even criminal. It reminds us of the vine dressers of the fertile slopes of Vesuvius, who being for years unharmed by the seemingly extinct fires of this Vulcan's forge, had pushed their gardens higher and higher up the slopes until that fatal night when some Titanic convulsion caused the lava streams once again to overflow, and silence forever their scepticism and temerity. Or again! many years ago we were taught that foul house-air meant ill-health, and the Rawlinsons, Chadwicks, Parkes, and Simons of the middle of the century in words as living and forceful as of the prophets of old, taught that dirt in food, and air, and water, meant disease and death and measured it statistically; while to-day we have municipalities relaxing the laws regarding the ventilation of school-buildings and factories, and the public and their architects indifferently permitting the "economy" furnace agent to return to him his own foul emanations to be breathed over and over again, and to call it scientific house warming.

A few years ago we learned the use of certain chemicals as germicides, and taught the public their uses in the destruction of house infections, and so notably lessened the prevalence of contagious diseases. To-day in a dozen forms we find the same class of drugs used to preserve impure milk from going *bad*, and being added to foods in half-a-dozen forms to hide defects which would properly forbid their use. For years the dissemination of tuberculosis from diseased animals has been taught, and for a time the people believed; but to-day the public have ceased to believe and have almost calmly accepted the proposition of the producer or vendor that the whole thing is a phantom of the imagination. Nevertheless the death-rate from this source increases rather than lessens.

It is apparent then that society has for the moment in many ways grown tired of striving, and individuals are not to be readily roused unless by some "new sensation." The flux and reflux, have however, ever marked human progress, and in health matters it may be quite true that the public enjoying the many benefits which the remarkable evolution of public health measures has brought about during the last quarter of a century have forgotten

"The hole of the pit whence ye are digged."

Turning from these reflections which the close of a century of public health progress has called up, it is proper that I should refer briefly to the state of several diseases which the Board has had to deal with during the past year

Smallpox. The year has not passed without seeing the introduction at different points of cases of smallpox. Indeed, the beginning of the year saw the disease still present in a few cases in Essex, where it had prevailed for two months in several townships.

The following table gives the location and extent of the several outbreaks :

SMALLPOX IN ONTARIO DURING 1900.

County.	No. of municipalities.	Cases.	Deaths.	Month.	Source of infection.
Essex	3	6	.....	February...	Detroit.
Middlesex	2	2	.....	February...	"
York	2	18	.....	February...	Indiana.
Lambton	1	1	.....	January...	Railway cond'r.
Lanark	1	6	2	May	Michigan.
Renfrew	1	1	1	May	Traveller from Japan.
Thunder Bay	4	17	6	May	"
Simcoe	1	1	.....	May	"
Algoma	41	4	1	May	Detroit.
	2	5	.....	December ...	Port Arthur case.
1901—Algoma	5	100	3	January ..	Michigan.
	Many lumber camps.			February ..	Michigan.
				March	

The Province has much reason to congratulate itself that with so many importations the disease failed to obtain any serious or permanent foothold. The deaths fortunately were few, as the type of disease imported from neighboring States was mild ; but a notable exception is seen in the cases referred to in special reports in Part II., in connection with outbreaks caused through the importation of disease by way of Vancouver from Japan. The question of the type of disease will be found discussed in a succeeding chapter ; but it may here be stated that one of the difficulties your secretary has experienced in dealing with the outbreaks of recent disease has been due to their successive mildness. It has always been common experience that measles has spread rapidly as an epidemic in those communities where, as in Ontario, it has been mild in type ; and in certain classes of the community smallpox as it has recently appeared in the northern lumber camps, has been looked upon by many in much the same way. But the excessive contagiousness of the disease and the persistent vitality of the germ, not to mention its loathsomeness, must even in the mild form ever prevent it being looked upon by our people as a disease which can for a moment be dealt with in other than the rigorous manner which has characterized the Board's work during the past nineteen years. The extent of the outbreak, which, through its character not being recognised, exists in the lumbering districts of northern Ontario at the time of writing, has become such as to call upon the Board to make unusual efforts for its suppression. To understand how it has become necessary to establish a smallpox camp under the supervision of the officials of the Board directly, it is necessary to remind you that some 25,000 men are employed

in lumbering largely in the unsettled territories without municipal organization, and that in camps many miles from railroads and physicians, the presence of disease may exist for weeks or months unless it take on such a virulence as to cause deaths and consequent panic amongst the men, who then may leave only to carry the disease far and wide to other camps or distant settlements.

At the present this hospital camp near Sudbury consists of six large double-walled tents 30 ft x 15 ft., wherein are some fifty patients, under the care of a physician specially detailed for this duty, while cooks and all the necessary accompaniments are under the charge of the Chief Inspector. The Canadian Pacific Railway have assiduously seconded the efforts of our officers and have set apart a car for transportation to the smallpox hospital of patients who are brought out from the lumber camps. This work has been extended, in view of the thousands of men returning to the eastern settlements after their winter's work, to the inspection and vaccination of all the men, with the disinfection of their clothing and luggage in a steam disinfecting station constructed and equipped near the railway station. This task of inspection and disinfection adequate for handling several hundred men daily is unique as perhaps our first example of an extended system of inland inspection and disinfection intended to deal with thousands of men. The protection to the municipalities will be judged by the fact that already owing to the return of men from the woods some twenty municipalities have had cases of the disease introduced before inspection was instituted. Its successful results in rapidly suppressing disease can, however, hardly be doubted.*

The year has again illustrated certain facts regarding the transmission of smallpox, which have been taught time and again in previous epidemics, but which, if we are to judge from experiments of the "new science" of disinfection as set forth by such prominent officials as the port officer of New York in a recent publication, must once more be asserted with all the vehemence which as an executive officer encountering smallpox cases not at the port but inland, I may be expected to judge of as to how far the theory that infection is not carried in the clothing worn by "immune" persons is in keeping with the facts.

Dr. Doty of New York, states in a published pamphlet containing an address read before the Am. Public Health Ass. in October, 1900: Page 2, "*Contrary to the popular belief, the most careful investigation, both from a scientific and practical standpoint, has demonstrated that the clothing actually worn by well persons is not a medium of infection. This is also true of ship's cargoes.*"

Your Board will recall a genealogical tree of smallpox published in the Report of 1886 and referred to in the following paragraph, where a party of Russian immigrants, protected by vaccination after one of their number developed smallpox during the ocean passage and had been taken off at Grosse Isle quarantine, below Quebec passed west to Manitoba, and though not a single one developed the disease, transmitted it by contact on trains and boats to other immigrants going to Michigan, Illinois, Manitoba, Dakota and Ontario.

"Having proceeded to Quebec, and subsequently to Grosse Isle, I learned from Dr F. Montizambert, Chief Quarantine Officer of the St. Lawrence, that Russian immigrants suffering from smallpox had been landed at Grosse Isle about 13th of May. Imagining that their fellow passengers might have passed on the way to Manitoba via Lake Superior, I at once wrote to Mr. Beatty for information on this point. He promptly replied that certain Russian immigrants had passed up the lakes on May 20th, per S.S. Athabasca, and as I had learned that none of her crew were from Lower Canada, where smallpox had been so prevalent, I at once connected the outbreak in the persons of two of the crew with these immigrants. To show that the contagion had been carried on this steamer either by persons, clothing or baggage, I was soon to have ample proof. On the 30th of June I received a telegram from Dr. J. Hamilton, Supervising Surgeon-General U.S. Marine Hospital Service, and some days afterwards similar information from Dr. H. B. Baker, Secretary Michigan State Board of Health, that a man named Montgomery had entered Michigan via Sault Ste. Marie and had taken sick with smallpox at Stalwart, Chippewa County. I found later that he had gone from Harriston, Ont., to the Sault on the S.S. Athabasca of May 20th. Having further noticed the occurrence of a case of smallpox about the same time in Woodlands, Man., and believing in its possible connection with the same Russian immigrants, I wrote for information to the Deputy Minister of Agriculture, Winnipeg, Acton C. Burrows, Esq. He promptly replied, courteously forwarding as soon as obtained information to the effect that a Mrs. A. Church had arrived at Halifax on April 4th, and had passed via C. P. R. direct to Winnipeg: that there had been no smallpox at the place she left in England; that there had been none on the Allan S.S. Parisian, of which she was a passenger, but that she had remained at the Dominion Immigration Building in Winnipeg till about the end of May (five days, say, after the Russian immigrants must have reached there), and that within less

* This report being delayed in publication finds camps disbanded, some 500 people having been quarantined, 160 cases being smallpox, and epidemic suppressed in June, 1901.

than two weeks from the time she left immigration building and had reached Woodlands, she was taken sick with smallpox. I was further informed regarding cases of smallpox in Norfolk County, Man., beginning in the person of a man Donald McCuaig, from Chatham, who had arrived in Manitoba about the end of May. Evidence to the effect that he had gone up by the S.S. Athabasca, or had been in the immigrant building has not been obtained. The matter had now become so interesting that I followed out any clue that might connect other cases with these immigrants and the S.S. Athabasca.

By newspaper reports I further learned that a family named Skeen, Canadians from Manitoulin Island, had been taken sick with smallpox in Dakota. I at once wrote Dr Francis, Manitowaning, for information regarding the route taken by this family. A kind answer containing the following facts was promptly received by me:—There had been no smallpox on Manitoulin for a number of years, while this family in going to Dakota had first taken a local steamer to Owen Sound; thence they went northward by the C. P. R. steamer Athabasca on the 20th May. The time of their falling sick corresponded with the period during which they could have been exposed on the Athabasca. About this time a report came from Michigan that other cases of the disease had broken out in Wayne County and in Detroit. The information received also connects the Wayne County outbreak with the same Russian immigrants. It occurred in the person of a German immigrant, who had entered Michigan via the St. Lawrence and Ontario, between the 15th and 20th May, and must therefore have travelled west, probably in the same car, or stayed at the same immigrant sheds as did the aforementioned Russians. Cases in Illinois are also stated to have occurred about the same time in immigrants who had passed through Canada. The following particulars regarding these cases have been received."

During the present year (1900) the widespread outbreak of April and May, infecting persons in Manitoba, Ontario and Quebec, resulted from a single case who had left Australia, touched *en route* at Japan, and apparently from goods purchased there and opened during the voyage had contracted virulent smallpox, which did not develop till between Calgary and Winnipeg, at which latter place he was removed suffering from an undiagnosed disease to the General Hospital, and there died of haemorrhagic smallpox, which had been called purpura haemorrhagica, and the body placed in the morgue awaiting transhipment to friends. Fortunately the Medical Health Officer's suspicions were aroused, and he, inspecting the corpse, diagnosed smallpox and acted accordingly. The Pullman car went on its journey to Montreal and had again returned to Vancouver before it was known that the passenger, Mr. Findlayson, had died of smallpox. Now the sequel!

On May 16th the Secretary of the Manitoba Board of Health wrote that already 20 cases had grown out of the exposure to Finlayson either in railway employees or inmates of the hospital, with three deaths to date. The car "Tokio" proceeded east on April 12th. A Mr. Drury who had travelled from Rossland, probably associating with Finlayson went to the Windsor Hotel, Montreal, sick, and was the cause of six cases and two deaths. Mr. Tierney, C. P. R. railway agent at Arnprior, had likewise journeyed with Finlayson west of Winnipeg; stayed a day in Winnipeg and then proceeded to Arnprior, where in 12 days he sickened, and died on May 4th. This would seem to have been all the persons either in Ontario or Quebec who took the disease from being in the car with Finlayson; but by no means the end of the cases. On May 3rd, Dr. Beck of Port Arthur, telegraphed that conductor J. J. Webb was sick with smallpox, and the assumption was that he had been conductor on the "Tokio." I was personally informed however, by the conductor, who actually carried the "Tokio" through, that Webb was not on the "Tokio" at all but had brought down the train of the suceeding night, but that he had sat and chatted with Tierney, who had been exposed west of Winnipeg to Findlayson, and who did not sicken till 12 days later. But further, the same conductor informed me that Mr. Elliott, mechanical superintendent, C.P.R., at Carleton Place, came on board at Whitefish with his son, and journeyed with Tierney, all being employees of the railroad, and on May 4th I received a telegram from Carleton Place stating that the boy Elliott was sick with smallpox. Yet one more case occurred—but whether from the "Tokio" or the exposure to Tierney has not been determined, in the person of J. Whalen, a contractor of Port Arthur, who took ill of undiagnosed smallpox about this date. He had to frequently leave on the local trains, having contracts along the railway. From exposure to him members of his family, a partner in business, his foreman, the manager of a mine, and the washer-woman, in all nine persons took the disease.

The point then seems proved beyond question, that from the clothing of Tierney, conductor Webb and the boy Elliott were infected, and possibly Whalen; and what is further most satisfactory to note the "Tokio" after being cleaned at Montreal in the routine fashion, did not apparently infect a single person on its return journey to Vancouver.

In the outbreak now existing, another case may be cited. A workman, who had been in the infected "Soo" district, returned to his home in Tay Township about March

1st, and though he had not recently had smallpox was the means of conveying the disease to his brother, who sickened on the 10th of March, having been more or less constantly in his company, and through whom the disease was spread to three municipalities.

With facts such as these repeating themselves in outbreak after outbreak, it would seem that the protest made by several experienced officers at the Indianopolis meeting of the American Public Health Association against such *dicta* as those set forth in the report of Dr. Doty, was based upon an accumulated series of facts, which perhaps the writer had not the means of personally verifying, but which nevertheless are so well substantiated, that the argument of Dr. Doty for the passage inland of persons, whose clothing may have been exposed to contagion in infected ships, is not only wholly unwarranted, but further would become if accepted and acted upon, a most serious menace to public health interests.

The quarterly and special reports found in Part II of this Report will be found to deal further with various matters affecting the dissemination of smallpox in the Province.

Diphtheria.—It was remarked in the report of the quarter in May, "that the monthly Bulletin issued by the Board shows much the same distribution of this disease as in the same quarter of the previous year, with some limitations" The same remark holds good for the disease throughout the year. The report for the fourth quarter gives the following comparative tables for the cities of the Province during the two years, that for 1900 being completed.

Deaths from Diphtheria in Ontario Cities by Months

1899	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	10	13	9	12	8	14	11	11	10	16	13	15
1900	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	11	17	15	13	16	14	18	13	28	19	27	22

The remarkable decline in the deaths from this disease has become one of the most notable illustrations of the progress of Public Medicine during the past decade. The following table from the Annual Report of the Registrar General indicates the mortality during several periods and years in Ontario.

Deaths from Diphtheria and Croup in Ontario.

1887	1,786	1897	976
1893	1,044	1898	634
1894	1,075	1899	599
1895	942	1900 (monthly reports)	480
1896	925		

Such results are not at all peculiar to Ontario, since many cities both in Europe and America have shown equally great reductions. The study of the accurate statistics of any locality illustrates, however, how in a very high degree the disease partakes of the characteristics of an acute epidemic disease. Until the last decade this feature of the disease was much in dispute, and climatic causes were stoutly insisted upon as being a chief cause of its prevalence. Fortunately, however, your Board early recognized the zymotic character of the disease and as early as 1887 published a special report pointing out its essentially communicable character. That this was not then commonly recognized is seen in the fact that London had not until as late as 1894 made any serious attempt to provide for its treatment in the Metropolitan Asylums Board's Hospitals. As early as 1891 an Order-in-Council was passed in Ontario giving special powers, similar to those for dealing with smallpox, to your Board. That these views and powers have done much in educating the public and in assisting Local Boards of Health to suppress out-

breaks there can be no doubt; nor can there be any doubt but that the disease once begun as an epidemic demands practically as thorough means as smallpox for its eradication. In the statistics of Ontario cities given above it is readily seen that in the two years, 1899 1900, nearly all the deaths were in three cities and in 1900 almost wholly in one. The same fact of local epidemic outbursts is found by reference to the statistics of former years, as that of 1891, where the city of Guelph had 39 deaths in a population of 10,000, or Toronto 387, in 1892, in a population of 188,333. It is deemed of much importance that these facts be insisted upon since there is incidental evidence going to show that with the decline in the deaths from diphtheria, owing both to the mildness of type in some instances, and to the successful results of the anti-toxine treatment, its old contagious character or that of the persistence of the contagion is being to some extent overlooked. The following letter with due allowances is given to illustrate:

EMBRO, June 3rd, 1901.

To the Provincial Board of Health, Toronto:

DEAR SIR,—At Christmas time last year a little boy took sick with sore throat. The parents told outsiders that it was tonsillitis. The father was sick, three boys were sick, and last the mother took it and died. The public was alarmed. The regular doctor went away to Toronto to get married, while the mother was sick, and left another doctor in his place. Medical Health Doctor was called in a hurry, but the mother was dead before he got there. Did not examine them to see what was the matter, just asked, and the father told him it was tonsillitis, but said she died of heart failure. Family feeling so bad he went away. This same doctor was there three times when one of the boys was sick, had three doctors in all, warned the married daughter, who had three little children, to keep away as it was infectious. The man went to woman to lay his wife out. Medical Health Doctor told one woman, a relative, to keep away, as it was catching. Allowed the children to go out. One boy met my son, thirteen years of age, going to school at half past twelve, noon, sat in the same seat with him, did not attend school that week—this was Monday noon. Thursday my son complained of sore throat. Called a doctor, told me it was not diphtheria, sick one week and then died. Sent a swab off to be cultured, word came back "diphtheria" after my boy was dead. Four other children took it and myself. We were quarantined, as were four other families. The first family had not been quarantined and every case was traced directly to them. One of his daughters was away to High School, she came home when her mother died, she also took diphtheria. A woman staying in there when she was sick said she knew it was diphtheria. In spite of the warning the married daughter had after her mother died, she went home. She also took it, as well as her little boy who died. They then quarantined them after the disease had spread. My daughter, aged nineteen, with her second class certificate, was ready to teach school. We thought she would die. It is four months since she took it, and she has never got over it. She cannot walk yet, and it left her with nervous prostration. We have had two doctors; they told us she would not get well at home, so we took her on a stretcher to Woodstock hospital.

Now we have a number of men comprising our Board of Health, but they never made an effort to shut out this first family "Day" is their name—Day came down to our place one night when they were sick, rubbed his hands over my boy's throat, and asked him was his throat sore—but the Reeve went to the Doctor and asked him if it was contagious, he (the doctor) said yes; he then got papers out and the doctor refused to sign them, so he went to the Medical Health Doctor, said something must be done, but neglected to do it. Diphtheria germs in their throats, children were allowed to go to school. Medical Health Doctor said he did wrong, and the regular doctor, that if he had been home would have quarantined them. You may know something was wrong; when the daughter came from Woodstock they were not going to let her in, so she took it, and then they were quarantined, and the school shut up.

Now, what redress can I get for my boy's death and my daughter's illness, the doctor coming two and three times daily for over a month? You can imagine what a bill, all through neglect of their duty in complying with the law. We were quarantined five weeks, and if they had done their duty first! Can we be made pay the doctor's bill and other expenses through neglect? Who shall be looked to: the Board of Health, the Medical Health Doctor, or regular doctor, or the doctor he left in his place? Their neglect has put us to a great deal of suffering and sorrow, and expense and trouble. My husband is only able to work part of the time and we have to pay house rent. Please let us know, and also can a doctor collect his bill for treating a patient wrong?

(Address) MRS. GEORGE GOULD,
Embro, Ont.

P S.—I may say the Board of Health sent a nurse at their expense and employed a messenger, but they would do no more.

The immediate cause for this is not far to seek. Formerly the twenty-eight days' isolation of a case was insisted upon, and with good reason. If the case lived to convalescence, it was usually only after membrane had continued to form for seven to twelve days. The exhaustion was extreme and medical attendance was necessary for several weeks. To-day, after early and adequate injections of anti-toxine the child seems actually recovered in many instances within a fortnight. And in this the danger of its spreading actually exists. The physician has ceased his attendance. The isolation is relaxed, even a certificate of recovery given and the premises disinfected. But the infection still frequently is present, the bacillus living on as a saprophyte, harmless through the developed resistance of the system, but readily given off in buccal and nasal discharges to become infective for other vulnerable persons. Indeed, it has not been unknown to see

set up again in the same patient, a re infection and re-development of membrane, the protection of the anti-toxine being short lived, should the throat through exposure have become again congested. Another point and one of much importance is the persistence, as shown by swab cultures, of the bacilli in the throats notably of convalescents and even well throats of those in hospitals where other cases are. Indeed, this persistence has become in many instances the occasion of loud protests from patients and even physicians where a child has been kept isolated week after week owing to successive swabs showing the bacilli still present If thought be given for a moment to the point the wonder is that they ever disappear in such places. Unfortunately ventilation even in many of our best hospitals is defective, and as the bacilli are given off from the throats of the sick they are carried dried or in floating pellicles of moisture upon the air, to be inspired by the inmates of the room. Hence not only are bacilli found in the throats of the sick but those of the nurses, and even of the physicians of the attending staff have been proved at times to carry them. We take the most complete precautions to change clothing and disinfect every exposed part and the mucous membranes after visiting a case of small-pox ; but it is common experience that the physician will visit diphtheria and even scarlatina patients without thinking it at all necessary to take any special means of disinfecting his clothes or face and hands when exposed to infection, much less his respiratory passages.

In more than one instance the bacteriologist and laboratory authorities have been made the subjects of criticism as not knowing their technique and finding the B diphtheriæ in everything, whereas unfortunately the critics are only illustrating rather their own ignorance or carelessness. The remedy in the case of the hospital is plain, viz , to place convalescents in well-ventilated apartments with solaria and balconies where they may not only recover more rapidly but where the purity of the air will cleanse their infective throats and prevent the inception of the germs from the throats of others.

The other point of importance which must not be overlooked is the repeated infection of the air of school-rooms by convalescents returning before their throats are freed from the bacilli of the disease. Case after case of this sort has been reported, the disease recurring in children from the same school room for months. Fortunately there is a ready means by which these recurring cases may be eliminated by an active health officer, supported by his Board. The visitation of an infected school for a fortnight by a physician and the careful enquiry into the cause of absence on the part of others will so enable the authorities to locate all the cases, since within ten days all cases of incubation will then have developed. In this way mild cases which may never have been treated are discovered and prevented from becoming the vehicle of contagion. The final disinfection of the school and houses made, where the swab culture test is possible, after freedom from bacilli of convalescents has been proved, enables a town to be soon rid of the outbreak, and as shown in the tables for the 13 cities, 4 had no deaths in 1899, and 5 in 1900, while 5 others had but 1 in 1899 and 4 but 1 in 1900.

Typhoid Fever.—As will be seen in the quarterly report in Part II , being that dated Feb. 6. 1901, reference is made, as in the report dated Oct. 15, 1900, to the unusual distribution and prevalence of typhoid fever during the last four months of 1900.

The figures there given are as follows :—

Deaths from Typhoid Fever in Aug , Sept., Oct., Nov , Dec.

Month.	1897.	1898.	1899.	1900.
August	22	34	55	44
September	39	44	55	58
October	45	54	88	120
November	34	50	40	141
December	22	21	25	92

The reference is made to these months since it is common experience that in this climate few cases of this disease occur before the later months of summer. A further

examination of the mortality returns shows that the death-rate in the 13 cities was but 67, and as a matter of fact, as seen from the following figures, the mortality in these, all of which have public water supplies, has been an almost continuously diminishing rate, remembering their increase in population, while the deaths which do occur in them are in fact due to many cases in the general hospitals which have been brought in from the surrounding country.

Deaths in Ontario Cities from Typhoid Fever.

1893	133	1897	117
1894	113	1898	104
1895	157	1899	130
1896	142	1901	112

During the three last years the total deaths in the Province were: 1898, 405; 1899, 452; 1900, 600 (estimated). It is plain therefore that the increase noted during the four months was not due to any general outbreak due to a polluted town supply, and the Province is to be congratulated on the fact that there is not in the 125 public water supplies one that has shown by this crucial test contamination with sewage. Having eliminated this possible source of a large increase, we turn naturally to the returns from the 750 smaller municipalities, town and township, and find that the number of deaths for the population of about 2,000,000 is in the total small comparatively. It is manifestly difficult or indeed impossible to enter upon the details regarding outbreaks so widely distributed, and yet, comparing the season with previous ones, we have to deal with the fact of a notable increase over the autumn months of several previous years. It is hardly supposable that the people are retrograding in their general attention to sanitary matters. Indeed, the very numerous applications made for analysis of suspected well-waters from health officers and physicians in different sections make it evident that there is an increasing concern regarding the well as a source of outbreaks of typhoid. Thus, during the 8 months from June to December, 165 specimens of blood were examined for the typhoid reaction, 180 specimens of waters were examined bacteriologically and 21 samples chemically. These came from the following number of municipalities by months:

June.	July.	August.	September.	October.	November.	December.
7	6	15	16	28	11	12

The disease was present in 95 municipalities—either the same one or different ones—in the five successive months.

Remembering that the type of disease has been as a rule mild in recent years, and that with modern treatment there is not a mortality greater than ten per cent., it is plain that the number of cases has been considerable. Regarding the source speaking of those towns with good public water, the disease has been found closely associated with those persons using the water from wells still in use, commonly in those parts of a town not yet reached by the water mains. Regarding the source in rural districts as primarily the same, not excluding of course milk contaminated through the water, and, some cases probably through aerial infection and pollution of food through flies carrying the germs, we have again to ask ourselves what was there in the temperature and humidity of the latter half of 1900 which aided the propagation of the germs of the disease in well water.

The table in Part II taken from the meteorological data for Toronto, which may be taken not as a perfect but partial index of those for the several other parts of the Province is to some extent explanatory. (Report for 4th Quarter.)

It will be noted that in the matter of temperature August had just 2 degrees higher than the average for the two previous years; September again 3 degrees higher than the averages of the two years and 5 degrees higher than that in 1899; October was over 5 degrees higher than the average of the years, while November was practically the same as the average of the two previous years.

Turning to the rainfall we have a condition much more difficult to guage in its actual influence, since the influence of rainfall on ground waters, except where the water bearing stratum is near the surface and beneath a sand and gravel upper soil, is not immediate and decided. The influence of heavy rainfall over large areas is not seen on deep ground waters for months, so slow is the movement of ground waters. Hence in spite of the fact that June, July and August in 1900 had compared with the average of 1898 and 1899, 2.4 to 1.2 inches ; 2.7 to 0.8 inches, and 2.7 to 0.6 inches, yet the farmers in some parts of the Province experienced more trouble in the autumn of 1900 in obtaining sufficient well water for their stock than in either of the two previous summers. This is in fact due to small rainfall in the two months of April and May, but especially of May, in both of which the rainfall may be assumed to have passed to the extent at least of 50 per cent. into the soil, the frosts of winter having passed out in March. Thus the rainfall of the two months in 1900 was 1.3 inches compared with 2.5 in 1899, and 1 9 in 1898 ; but in May alone the rainfall in 1900 was but 0.99 inches, compared with an average for the two years previous of 2.7 inches.

What seems then to have occurred was that with an unusually low annual rainfall in 1899 (28 97 inches,) and a very low potential rainfall in the first half of 1900—since the high snowfall of February would largely be lost by flowing off the frozen ground—the ground water of the wells was unusually low, and as the law of gravity causes the water area surrounding a well to draw towards the point where the level tends to be lowered by use, hence all sources of organic contamination within their range would tend to become tributary to the well, e.g. barn yards, privies and soakage from door yards. But more than this the waters of a well being low, the temperature of the upper air will cause a low water to grow warm sooner than if the bulk be greater.

CHAPTER II.

VARIATIONS IN THE TYPES OF SMALLPOX AND VACCINIA.

The persistence of the epidemic of smallpox in the United States during the past two years, and its present epidemic appearance in the lumbering camps of Northern Ontario would seem to again make necessary a reference to smallpox and incidentally to vaccination, which is invariably associated with outbreaks of the disease. Reference has been made in the literature of smallpox to the notable variations in the type of smallpox ; and the past year as already noted has made this fact once more prominent. Similarly with this the experience of public vaccinators with various vaccines in the market has made equally evident the fact that the vaccinia produced by the use of different vaccines, varies equally in type with smallpox. Various theories have been put forward to account for these variations in type in the two diseases, and without presuming to speak as a biologist, it seems desirable that some remarks from the standpoint of the executive health officer should be made. As has been almost universally observed, the present outbreak of smallpox in the United States and Canada appeared in 1898 about the time of the Spanish-American war and is assumed to have been introduced from Cuba or from the Phillipines or both. It is sufficient to know that smallpox of a remarkably mild type was introduced and has remained in all centres with but one or two exceptions, of the same mild type from the Gulf of Mexico to the 51st parallel in northern Ontario, and equally mild last summer as far as the Yukon and within the Arctic circle. Four known exceptions to this mildness of type are known to have appeared, viz.: in an outbreak from an unknown source in Eastern Ontario in January, 1899, the outbreak in New Orleans in the winter of 1899-1900, in an outbreak in Winnipeg and northern Ontario in April 1900, through a traveller from Australia via Japan, and that of January and February 1901, in New York. Others may have occurred ; but these are sufficient to illustrate the existence side by side in the same population of a type of unprecedented mildness, and of a type of normal and that from Japan of even abnormal virulence. What is likewise remarkable is that the mild type has persisted in one centre after another, and that the severe type in several successive passages has similarly maintained its virulence of type.

As an explanation of the mildness of the type in the more widespread outbreak, it has been suggested in different quarters that it is due to the fact of a partial immunity having been established in a people vaccinated during several past generations. That the explanation seems wholly contrary to the facts is at once seen in the fact that wherever smallpox of a virulent type is known to have been introduced, as in the Winnipeg case, its fatality is as great as in former outbreaks, and in a community more than usually likely to be immunized if their British descent from a people compulsorily vaccinated for half a century and more had any influence. On the other side it cannot be said that in a single State of the Union has compulsory vaccination in the British or German sense ever been systematically practised. What is further valuable is that the several other severe types noted have been where the disease of a severe type is likely to have been imported by trans-oceanic commerce, as from Glasgow or Naples to New York. Moreover, the present outbreak in Glasgow is of normal severity—a death-rate some weeks of 33 per cent being reported.

I think therefore that it may fairly be said that there is no evidence whatever to show that the physical systems of the people of these two countries show any increased ability through hereditary immunity due to vaccination to withstand the attack of a virulent type of the disease. It may incidentally, however, be observed that it does not follow that our habits of life may not be such as to tend toward a lessening of the severity of the type in its successive passages through a series of individuals. I am inclined to think that there is some room for believing that the fact of our peoples as a whole being to a remarkable extent, meat-eaters and abundantly fed plays a role in developing an increased resistance to the several diseases—scarlet fever, diphtheria, smallpox, measles and whooping cough. The fact of these diseases being usually mild amongst the inhabitants of southern countries who are more largely vegetarians would not in any way disprove the fact, since the climatic conditions making outdoor life there general, not only make their dissemination less but actually seem to tend to destroy in hot weather the germs of these diseases.

It may seem idle with such unsatisfactory answers to our questionings meeting us on every hand to attempt any explanation of this mildness; and yet there do appear to be some facts which tend to point toward partial explanations of the phenomena we have noted. One of the places where we can actually note results, if not explain their causes, is in the cultivation of vaccines. In the articles of Dr. M. Copeman of the Animal Vaccine Establishment of the Local Government Board of Great Britain is set forth the history of much experimental work in the preparation of vaccines. He has pointed out that smallpox virus can by a series of passages through calves be brought to a point where it produces no more serious results than ordinary lymph. Every day observation of the effects of the various bovine vaccines in our market makes it equally evident that, whatever measures are taken in the preparation, the lymphs of several reputable firms are productive of results varying *in toto cælo*. Not only this, but experience time and again shows that the lymph produced by some firms has gradually passed on the one side from a lymph producing a vaccination of normal character to one of abnormal severity; while on the other it has degenerated until it produces a delayed eruption of abnormal appearance and which is found to be wholly non-protective against an inoculation with a more active lymph immediately after and, as known in some instances, against inoculation with even the present mild type of smallpox. It must be remembered that all these variations take place in bovines, uninfluenced we know by hereditary immunity from ancestral vaccination, and from any notable change in the type of food—certainly not by the use of animal foods. Wherein then lie these influences producing, whether in smallpox or in vaccines, results so notably divergent? There is in both one fact that all will recognize and which to me seems to play an important role in the production of the varying phenomena, viz the presence or rather the varying virulence of the other germs present in the pustule whether of smallpox or vaccinia. We know that vaccine lymph, especially untreated lymph, gradually becomes turbid, owing, we are told, largely to aerobes present in the lymph before storing and that lymph at first faintly alkaline tends to become distinctly acid after a short time. With the numerous germs which are present in air, it must however be supposed that the air of different stables, just as of different cheese-factories or creameries, becomes through accident impregnated with some one or more specific form of germ and that if this microbe has a capacity for developing in the maturing pock

it will almost invariably find its way there. Under ordinary conditions, however, common experience would teach us that the various pus-forming germs, as staphylococci, and occasionally streptococci, are almost invariably met with in this as in other pustules. In fact, the Report of the Vaccine Establishment of the Local Government Board of England in 1899 shows that every specimen of untreated lymph had one or more species of staphylococci present in large numbers before being treated with glycerine.

Now, one of the most remarkable properties of these staphylococci is their great capacity for rapidly developing or decreasing their virulence. The presence constantly or frequently of one or both of these in the air passages, and their seeming harmlessness, until, under some change in the blood, such as the development of an acidity from excess of uric acid, perhaps through cold, and retained systemic secretions when we may see within twenty-four hours an acute tonsilitis and post rhinitis with free exudation and development of membrane, constitute perhaps the most remarkable instance of a development of virulence, for we know that for a short time these anginas are notably infectious and that vulnerable persons exposed are most readily attacked.

Assuming in the case of vaccinated heifers, that two animals are vaccinated with the same lymph, just as two children may be, we have the factor of a varying degree of contamination of the vesicles to deal with in the same stable, or still worse in different stables unequally managed, and besides this the individual factor of the varying constitutions of the two animals. The difference between the vaccinated arm of a fleshy or lymphatic person and of one of a firm-tissued, sanguine temperament, sufficiently illustrates the personal factor.

It seems by analogy an almost necessary consequence that with pus germs present in an inoculation which has caused a certain destruction of tissue the extent to which the phenomena of either vaccination or smallpox will develop in a vesicle will depend upon the assistance which the pus germ gives to the vaccine microbe through symbiosis Thus Stanley Kent, describing the pathology of the vaccine vesicle, finds, in a few hours after inoculation considerable inflammatory disturbance, with fibrinous exudation occluding the vaccination wound. In the plug are numerous micrococci with abundant leucocytes in the surrounding tissues. The blood vessels contain numerous organisms of the disease. The neighbouring tissues show great cell proliferation, with many broken down cells near the wound. These increasing products of cells fill the loculi of the vesicles along with lymph. The resistance of the individual to invasion will notably vary in different cases, since none who have seen a series of patients exposed directly to the same source of smallpox can doubt, and apparently we can not doubt, but that in the least resistant persons the germs of smallpox have been assisted by the staphylococcus and equally that the staphylococcus has been given an opportunity to develop virulence through the smallpox.

By this process of reasoning we seem to be able to find an explanation of how in the modern scientific methods of preparation of vaccine the degree to which asepticism is carried will be an important factor in the development of greater or less virulence in a lymph, and how a re-vaccination with the slightly altered lymph thus produced will similarly in a second passage depart yet another step toward or from the assumed normal virulence. Applying the argument to the mild form of smallpox which has prevailed, we have witnessed apparently the same phenomenon occurring through a series of cases, exposed to the same cause. Many cases have begun with serious prodromata, and have exhibited the various stages of a rash almost confluent with a free pustulation, an infiltration of tissue and indeed all the indications of a virulent case. But just at the moment when deep erosion of the pocks seems certain, apparently the antitoxin developed in the blood of the patient has become sufficient to antidote the degree of virulence of the smallpox virus, and the ulcers of the surface dry up as readily almost as in a scratch on a healthy person. On the other hand, if in a scrofulous patient or one having a tendency to glandular inflammations, or in a person of low vitality, the virus be of sufficient virulence to overcome the natural resistance of the cells the infiltration of tissue may be intense, and deep erosion of the ulcers may go on and pyaemia and even death occur from a germ of no great initial virulence.

In an article on vaccinia by Prof. T. D. Ackland, one of the officers of the English Royal Commission, 1889-1896, some considerations are set forth regarding the sequelæ of vaccinia. Referring to the dangers of vaccinating very young children, he states that :—

(*a*) A considerable number of children born in workhouses, and other charities are often feeble and sometimes diseased; (*b*) A mother may leave such an institution and return to conditions of life harmful to her child; (*c*) If vaccination is during an epidemic of smallpox performed on such infants, the disease produced may be beyond their strength to resist its effects.

Previous to vaccination children may be suffering from disease such as convulsions, diarrhœa, vomiting, scrofulous glands, eczema, etc., and from the effects of unsuitable food. Dangers to the vaccinated child may also arise from exposure in houses to other influences, as sloughing wounds, ophthalmia, or to insanitary surroundings. No open wound, Ackland states, can be expected under such circumstances to pursue a normal course and it is known that persons responsible for the care of such children very frequently neglect the most ordinary precautions. He further points to the fact that in the cases of unfortunate sequelæ, which the Commission was called upon to investigate, not a single case among the well to-do was brought before the attention of the special officers. Dr. Ackland thereafter indicates the necessity for the usual precautions against inducing inflammation as by rest of the vaccinated arm, and by protecting the vesicle against injury and filth infection.

We thus have briefly illustrated factors which are in practice seen to have a definite influence in creating modifications of virulence in cases of vaccinia, which are equally applicable apparently in developing modifications of virulence in the production of bovine vaccines and in the types of smallpox. To say for instance that because the sturdy axemen of the lumber woods, fed largely on animal foods, and who through severe exercise in the forests develop a great natural resistance to disease, live in badly ventilated and insanitary shanties, and that therefore they ought to develop a severe type of disease is no more unreasonable than to say that the "roost-abouts" of the quays of New Orleans in winter, half-fed and half clothed, though living in fresh air should not develop a virulence of the disease. We know as a fact that the shanty-men have not developed a virulent disease as a rule, and that many of the negroes of the levees have, as shown by the mortality in two successive winters, but which lessened again with the warm weather.

Remembering the incredible number of generations of the individual microbe developed during any zymotic disease, and their modifications with changing environment as in "cultures," it seems as irrational not to expect such changes to take place in the germ of smallpox as in that of diphtheria, bacillus coli or streptococci. What we must look for is an increased attention to the natural history of this microscopic flora and a more extended and careful study of the changes of micro organisms with environment, if we are to be placed in a position to adequately deal with modifications of disease as they appear "*in corpore*." While admitting the difficulties which are in practice to be found in controlling patients or groups of patients as in the crowded lumber-camps or the slums of great cities, yet the executive officer and the physician who are called upon to deal with the clinical symptoms, as they present themselves, in such a manner as to protect their own reputations and the public health have a right to demand of the authorities, who by legislation make compulsory laws and of the great public who insist on protection that every safe-guard shall be supplied which is possible through science in the investigation of the origin of disease and in the preparation of vaccines and antitoxines; and that every facility which by legal enactment is possible, shall be given whereby after inoculation with a vaccine or the quarantine of a smallpox patient, the treatment of the disease shall be made as safe as may be possible, with the end to prevent untoward accidents.

CHAPTER III.

THE SOCIAL PHASE OF THE TUBERCULOSIS PROBLEM.

The fact of the enormous mortality caused by tuberculosis in its varied manifestations has been patent to physicians, philanthropists and the general public for very many years; but especially has it been pressed upon their attention since the modern scientific theory of its specific causation, and therefore of its preventable character, has passed into a popular belief. The history of all movements of reform has been one of conviction on the part of a few, who, filled with an earnest purpose, have pressed their beliefs often upon an unwilling or indifferent public, and often indeed against interests and prejudices based upon selfishness and ignorance; and it is apparent that when the complex nature of the individual, social, industrial, and moral causes, which affect the development of tuberculosis, are understood it will be apparent that the movement now typified in National and International Congresses for the Prevention of Tuberculosis will be effective in results in the degree that their decisions are crystallized into practical legislation and that general public opinion of civilized countries becomes so positive that reforms in personal habits, in sanitary matters and in industrial and commercial methods shall follow as a natural consequence.

1. *The Personal Factor in Tuberculosis.* From one standpoint this subject is so purely one of curative Medicine that it would seem scarcely to be a subject capable of being here discussed at length; but when viewed more exactly it will be found that of all the factors of this problem there is none so important as this, viewed from the public health standpoint. And why? Preceding the medical is always the biological or physiological aspect under which man must be studied. He is essentially a physical organism or unit, subject to and governed by all those laws of environment, under which any organism whether plant or animal must be studied; and if in addition man must be studied as an intellectual being endowed with volition and freedom of action, it is only still more evident that we have superadded to the first a set of influences and conditions, making the study of the individual yet more difficult. When discussing the problem of preventing tuberculosis, viewed, as the student of man's natural evolution must view him, we must go back to those historic and even pre-historic ages and think of man the animal being slowly evolved from his primitive intellectual condition, as a denizen of the woods, caves and plains, and living a simple free life in the open air, up by slow stages to the man of our earliest Babylonan and Egyptian civilization, when the moral man appears at the dawn of history crowned with positive religious beliefs, and living in a society, still simple in many respects, yet with the most fixed rules regarding his social duties and relations as an individual member of the body politic. From king to helot each found his place in the social fabric, and therein fulfilled his duties, governed by a firm belief in his destiny as fixed by an unalterable Fate. Down through the ages we have seen society during the early centuries even of the Christian era with, not only its practice, but its belief in slavery, as fixed by the degrees of the Almighty, and in feudal times of the serf being gradually emancipated, but meanwhile performing duties to his feudal superior and obtaining certain rights gradually accorded him by his liege lord. Yet it must be confessed that except in isolated instances, there never has existed until the French revolution and the present century any generally recognized inborn and social equality of all the members of society in any country, and a practical recognition of the physical, mental and moral worth of the individual in the different grades of society. So late, indeed, as 1833, we find the English House of Lords, amending an Educational Reform Bill, on the ground that it would lead insidiously to a system of national education amongst the lower classes, and be dangerous to society; while the utterance is even now not unheard, that we have for the many too much education.

Reviewing these remarks in their bearing upon the problem before us it becomes evident that in ancient civilizations it was possible under a benevolent tyranny to deal with the lower classes as to-day we would deal with any animal, which had for its owner a special value; later under the simple rule of love of the early christians, a similar care was exercised over the individual in keeping with knowledge and opportunities; later,

again the serf may have received adequate care from his good feudal superior, but not until to-day with a democracy, so powerful in the exercise of its God-given rights as to become at times a tyranny through this very license, which its liberties have given it, do we see the individual choosing of his own free-will a pathway, at times, narrow and hedged by natural laws, regulating his daily physical and moral life, while at others, seemingly lost upon a plain of shifting sands, where some pleasing fancy leads the wayfarer to some seeming oasis, only to be found a mirage, or at most a resting place where the waters are scant and bitter to the taste. If such indicate at all the position of the individual in society it is plain that as the condition underlying all progress must be the growing personal conviction in the individual of his moral responsibility for his own wellbeing, a growing comprehension of how completely his life is subject to unalterable laws, whether physical, intellectual or moral, and of an ever increasing knowledge of what these severally exact laws are, accompanied by a willingness to conform thereto.

2. *The Social Factor in Tuberculosis.* As the individual becomes a unit in the modern social fabric, his interests as well as his duties necessarily take on a larger and more impersonal character for which he has we assume been fitted by the evolution of society. The character of his duties and responsibilities must further be in keeping with that of the society in which he finds himself, viewed from the intellectual and moral standpoint. It is readily possible in any civilized country to find illustrations of the differences which necessarily attach to each Taking the simple frontier settlement with its struggle against the physical obstacles of the forest, and we find the individual homestead, distant from others, having few needs and fewer opportunities for the exercise of social duties, yet commonly rich in those domestic virtues of self-help amongst its members and of unostentatious hospitality to the stranger. Turning to the society of a large city, and we find the individual almost lost in the complex interests and duties which his environment forces upon him. Here we find, as one would expect, the development of at once the extremest egoism and the highest altruism Forced to act and live in such a community, specialized work becomes a necessity and the individual may, and indeed often is forced to, exert his animal instincts in the fierce struggle of existence till all other faculties seem atrophied from lack of use; yet here too the intense exercise of many faculties does produce in others the noblest examples of practical philanthropy, where man is seeking ever to uplift his fellowman. In art, in science, in the uplifting of the fallen, in the helping of the unfortunate, in the care for the children and the aged, and in the co-operation of the units as a body corporate in all which makes for municipal progress and religious activity, we see the type developed, which ultimately is to make of society an organism, as instinct with life and harmonized energy, as are those very physical agencies, which year by year are through the discoveries of science being made his willing servants. Applying these illustrations to the problem before us and it becomes apparent, in a disease historically associated with the density of population in cities, with the insanitary conditions especially incident to the accumulations of organic matters due to the existence of life on close areas, to the ill ventilated abodes of the poor, and to the factories wherein the millions of city dwellers spend their existence, that the future immunity of the people from it must depend upon the degree to which the plane of existence of society as a whole becomes such as to make common endeavor against it a matter of every day concern.

3. *The Industrial Factors of the Problem.* It will be apparent to all who have studied the industrial development of the past century, that it has had an influence on society in a hundred ways which under simpler conditions would have been impossible. Not only has it reversed the relative positions of rural and urban populations, but it has further given to the latter many special attributes making even different cities engaged especially in some particular industry such as cotton making, iron making, manufacture of chemicals and so on, each to have its special mortality. It suffices, however, to note that industrial and commercial evolution have created new social problems, some advantageous, some adverse to the public health and especially to that disease from whose domination we seek deliverance. A study of the struggles of civic and health reform during the last century, notably in England gives an accurate idea of how slowly the public, whether employer or employed, came to realize that industrial success did not mean essentially a slavery of the work people. Every step towards lessening the evils of

child labor and of reducing the hours of labor was fought in Parliament and in municipal affairs, and not until the latter half of the century had the humanitarian advocates gained such an ascendency, that the legislation was passed, embodied in the Factory Acts and Labor Laws and in various Acts such as the Public Health Act, the Alkalies Act, the Rivers Pollution Act, all tending to improve the social well-being of the people Coincident with such was the scientific and mechanical progress and invention which made the improvement in the social conditions of the people possible. Chemistry, applied to the study of house ventilation, to the problem of life in mines, to the purification of streams, to the collection and removal of the poisonous gases in various manufactures, was perhaps the first and greatest agency in the betterment of the conditions under which men worked and lived ; and following it closely were those biological studies, which have so widened the mental horizon, giving to their devoted students a position and influence amongst the leaders of the world's thought, which before had been accorded only to the theologian and philosopher. In no other way would it seem could society at large have been so rapidly placed upon the same plane of an equality, begotten of the power which knowledge gives, and which makes with freedom of opportunity every citizen a power, in proportion as he is able to put his knowledge to practical account in the world of industry. That, however, this knowledge giving man power over the forces of nature has for a moment a seeming disadvantage from the social standpoint is seen in the possibilities which are given to capital in so utilizing mechanical, chemical, electrical and other inventions in our giant industries as would seem to make of even the greatest discoverer but a small portion of the enormous machine. On the other hand it has placed the power in the hand of the individual, who deems himself the sport of some untoward fate, to avenge himself through these very agencies, against those in high places and even against society at large. Amidst it all, however, in the ceaseless ebb and flow of passion and of desire, the overcoming virtues of charity and mercy in human life are seen, and the essential fact of the brotherhood of man seems from the very necessity of life to be slowly forcing itself to the surface.

In all this we may find some grains of comfort when we dream of the time when consumption will cease to be the scourge of the poor, the destroyer of the fairest blossoms in the homes of the rich, and the constant reminder that in death all men are alike equal. It may perhaps seem idle to even imagine such a good time coming, when we see urban life becoming more intense, more complex, and its demands for money as the source of power, greater day by day ; but it must appear to many an employer daily more evident, as a mere financial investment, that the health of employees becomes an important part of any successful business, while the constant influence of public opinion, in the abatement of preventable evils, does gradually produce their remedy even though it be set down to the credit of intelligent selfishness. With a community all discussing the ever-varying subjects presented in the daily press, such for instance as carefully collected statistics regarding some special social condition as affecting the death rate, it becomes only necessary that some practical scheme for its amelioration be so pressed upon the public that they become gradually convinced of its utility, when the reform is brought about and the remedy supplied.

This has been seen,especially in dealing with the problem of sanatoria for the cure or amelioration of cases of tuberculosis. In Germany, where the social problem of aiding the working classes has been advanced farther than anywhere else, sanatoria for the treatment of some 25,000 people annually have been erected within the last five years,and will be followed in other countries so soon as their practical utility has fully taken possession of the public mind. It may be urged that the reform will rather depend upon the moral status of a people, or in other words rather depend upon the altruism, which teaches the common brotherhood of man ; but it must be remembered that the permanence of the action based upon any teaching will depend essentially upon the belief that such is demanded in the interests of man's material and social condition. Thus it would seem evident that without a knowledge of the cause of tuberculosis, of the ways by which the germ is disseminated in the human body, of the conditions which form or retard its propagation there, and of the means which modern science teaches tends to promote its cure, we must inevitably remain helpless before its ravages, and bow resignedly before it "as a visitation of Providence" or the punishment of some demonic agent.

What is apparent, therefore, is that our special duty and that of all who see in the ravages of tuberculosis not only an individual and family misfortune but a social and economic evil, is to press forward the work of educating public opinion through every available agency, not only as to the individual, social and industrial influences promoting the dissemination of tuberculosis, but also of the scientific, municipal and social measures possible for its prevention and treatment. The outlook cannot be discouraging if we base our hopes upon the gradual education of the people to a sense of their own interest and duty in the matter. We recognize how sensitive the people already are in the matter of diphtheria and scarlatina; so in this they must learn to appreciate how gradual and often unobserved are the influences making the individual a candidate for tuberculosis. Perhaps too we can teach the claims upon them of the less fortunate members of society on whom the stress of life presses, so that, even if they would, they cannot at all cast off the evils of their environment. If it could be made plain to all that happiness as well as safety lies not in a life self-centred, but in becoming a source of benefit to others the problem would be solved.

But the processes by which the ignorance and inaction of the general public become not only informed of, but believers in, the many facts, which to the scientific mind have become self-evident truths are so slow that there yet lingers, paralyzing individual and public action, the half-hidden and perhaps unspoken belief in a Fate, not yet relegated to old mythologies, making inevitable *what is to be*. But none who realizes how potent the intellect of man has become, and will yet more become, in moulding the forces of nature to his ends, can see in such other than a practical illustration of the goodness of Providence.

"Strive, not rest,
Burn and not smoulder, win by worth"

is the philosophy which Browning teaches us as holding the true meaning of life, and it is apparent that social progress depends upon the insistent belief in such, if the ideals which we should strive for are to be attained. It is the new philosophy which brings our physical and social ills within the realm of much which hitherto has seemed to belong peculiarly to the moral and religious sphere; but as we are daily learning that the physical, intellectual and moral is a unit from which no one factor can be divorced without the individual suffering, so shall we gradually have to realize that in such a disease as tuberculosis, which has in a peculiar degree made sport of the lives of men in every age and country, marking especially the toiling millions for its victims, its lessening prevalence, and decreasing mortality will become the most delicate index of social-well-being, and of the disappearance of the evils due to ignorance, poverty and vice. Thus engaging the attention equally of the physician, clergyman and philanthropist, all will hail the dawn of the morning when this disease, following physical degeneration from any cause, whether moral, industrial or hereditary, shall have been overcome, as have been so many others within the past century through the advances of science, that they then will sing pæans of victory for blessings greater even than the triumphs of peace over war.

"Greet the unseen with a cheer!
Bid him forward, breast and back as either should be,
"Strive and thrive!" Cry, "Speed—fight on, far ever there as here."

Respectfully submitted,
PETER H. BRYCE,
Secretary.

REPORT OF THE BACTERIOLOGIST OF THE PROVINCIAL BOARD OF HEALTH LABORATORY.

To the Provincial Board of Health :

GENTLEMEN,—I have the honor to submit to you the following report of the work done from January 1st, 1900, to December 31st, 1900.*

The work of the laboratory consists of routine examinations for the diagnosis of tuberculosis, typhoid fever, malaria and influenza, rabies, anthrax, actinomycosis, glanders, tuberculosis in animals, for the diagnosis and release in diphtheria, and for the bacteriological and chemical examination of suspected waters.

The specimens are examined free for the purpose of promoting the work of the Local Boards of Health, and to this end it is desirable that as far as possible they be sent through such channels. Often this would cause delay and so vitiate the examinations and their usefulness. To avoid this specimens in most cases should come directly from the physicians and veterinarians. The reports thereon are sent by mail, or when requested, by telegram, in the last case at the receiver's cost. In the case of reports on diphtheria diagnosis telegrams are always sent unless otherwise requested.

Samples may be sent by mail or express and must be prepaid.

Samples sent by post must comply with the regulations of the Post Office Department. These are that diseased tissue be carefully enclosed in specially constructed double tin cases, closely packed with absorbent matter, and with closely fitting screw caps. They then, when addressed to the Provincial Boards of Health or to Public Laboratories, pass at fifth-class rate. An endeavor is being made by the Committee of the American Public Health Association to have such matter pass at letter rate in Mexico, United States and Canada, also to have a modification of the packing regulations. At the present time senders labor under considerable unnecessary difficulty.

Again, it is desirable that senders observe certain rules in forwarding samples :—

1. Always to address them to the Laboratory of the Provincial Board of Health, Toronto.

2. Always to enclose their own names and addresses. Letters or cards and specimens often become separated in transit. We have several reports here now on specimens awaiting an address.

3. In the case of sputa of suspected tuberculosis, swabs for the diagnosis of diphtheria and smears of blood for the Widal reaction for typhoid fever diagnosis, cards must be filled out. These are for statistical purposes and should be fully and carefully made out. These cards have been sent to all the physicians in the Province. More are sent on request. It has been decided that the examination cannot be made free of charge if this regulation is not complied with, and if cases are not reported to Local Boards subsequently for their benefit.

4. In the case of samples of suspected tuberculous sputum, the morning sputum (not more than half an ounce) must be put in a clean, wide mouthed bottle, provided with a well-fitting cork. When a positive result is obtained no further examination will be made free of charge. When a negative result is obtained samples will be examined until the physician is satisfied that tuberculosis is absent.

5. Samples of suspected diphtheria exudate, or specimens from convalescent cases to determine the absence of the diphtheria bacillus must be taken on sterile swabs, and for the release from quarantine it is advised that swabs be taken from the nose as well as the throat. These swabs may easily be made by wrapping a little non absorbent cotton (jeweler's cotton best) about the end of a stick or a piece of wire, preferably copper or aluminum wire. The cotton end need not be more than one-half inch in length nor more than a sixth of an inch thick. The swab should be sterilized along with its container before smearing. This can be easily done in any ordinary cook stove oven by dry heat of an hour's exposure. The fingers of a general practitioner as well as the absorbent cotton might independently of the patient carry the bacilli.

* This report includes the work done by Dr. J. J. Mackenzie up to the time of his resignation on July 23rd, as well as that done by me since that time.

6 Samples of suspected typhoid blood may be sent by letter, by allowing a few drops of blood to dry on a piece of clean, glazed writing paper, preferably on a small piece of clean glass.

7. In the case of suspected rabies in dogs it is necessary that a portion of the spinal cord and medulla of the dog or animal be forwarded with as little delay as possible, taken from the animal immediately after its death under all antiseptic precautions, and this enclosed in a sterilized bottle and the bottle packed in ice and sawdust.

8 In the case of suspected actinomycosis a small portion of the diseased tissue may be placed in a sterile bottle and packed in ice.

9 In the case of other contagious diseases of animals it is necessary that small portions of the spleen and liver or intestine and any portion showing lesions be removed with antiseptic precautions, enclosed in *separate* sterilized bottles and the bottles packed in ice and sawdust.

10. Malarial blood for examination should be spread thinly on a cover glass or slide with as little handling as possible and allowed to dry in the air before packing in a tin box.

11. In the case of influenza, swabs may be taken in the same way as the swabs in diphtheria are taken and with the same precautions

Water Samples.—In sending specimens of water for chemical examination the following rules should be observed :

a Use glass stoppered half gallon glass bottles or Winchester quarts.

b. Cleanse carefully, stopper as well, by washing thoroughly with a solution containing 25 parts of concentrated sulphuric acid in 75 parts of a saturated solution of bichromate of potash in water and rinse repeatedly with the water from which the sample is to be taken.

c. Express in uncovered boxes the bottles well packed in sawdust, necks exposed. In winter the samples should be protected against frost.

d. Do not use any sealing wax. Label the bottles always.

e. Samples should be taken below the surface, the stopper being taken out below the surface and replaced after filling, in the same way.

f. Samples should be shipped by express with as little delay as possible so that as little time as possible intervene between the collection and analysis of sample.

g. When a biological examination is required, specially sterilized bottles will be sent at request from the laboratory of the Board.

h. A certificate form, which will be forwarded on application, must be filled out and sent to the Board at the time of sending sample.

Physicians will kindly remember that the examination of urine, of tumors and other neoplasms is not a part of pubic health work coming under the Public Health Act, and that, therefore, should they send such to the Provincial Laboratory the specimens will be turned over to some pathologist for examination.

No research work of any amount has been attempted as the work of the laboratory has been increasing constantly. A continually larger number of physicians are taking advantage of its privileges, especially has this increase been marked in the direction of water examinations.

The laboratory is open every day from 9 a.m. to 5 p.m., except on Saturdays and holidays, when it is open until 1 p.m.

The first part of the report deals with the methods used in the laboratory. The second part with the results obtained, including tables illustrating the points discussed.

Three mails are received daily, 9 a.m., 12 a m. and 4 p.m.

Diphtheria Diagnosis.—No outfits are sent to practitioners for the sending in of swabs. Ontario is a large Province and in the outlying districts medical officers are widely scattered. Swabs are accordingly sent in after the device of each sender. It is very rarely that a *sterile* swab is received. On the whole, and so far as diphtheria is concerned, the results have been satisfactory. Some of the specimens not being packed according to post office regulations have been detained in the dead letter department, but have even after two or three weeks shown good growth We have not made it a habit to make a direct swab examination on receipt of specimen, preferring rather to incubate after smearing a blood serum medium. The cultures are put in the incubator as soon as possible after receipt. The

examination is made the first thing on the following morning and reports sent; the cases for diagnosis by telegram, if for release, unless otherwise requested, by mail, cards are sent at the same time. We trust to the morphology entirely for recognition of the bacillus, keeping in mind always that those organisms found are not at all times necessarily virulent to the patient immediately concerned. The ideal method would be to test the virulence, but this is a process requiring considerable time and would be entirely out of the question for practical everyday work. Organisms non-virulent in one subject may become very virulent to the next. The purposes of public health are secured by the finding of the bacillus or not. When the result is positive, that is, shows the bacillus of diphtheria, the patient is isolated. Many municipalities now require a negative result or absence of the bacillus before releasing from quarantine. Where this rule has been in force it has proved very satisfactory in limiting the prevalence of diphtheria. In this Province one negative has been considered sufficient for release. There is a growing feeling now that two consecutive negative cultures should be required. Dr. H. W. Hill quotes statistics showing that after one negative 30 per cent. of the total positive persons go out of isolation while the bacilli are still present. Often the bacilli are hidden away to be extruded later on with the normal secretions. A normal looking throat often harbors the bacilli of diphtheria. After two negative cultures taken on two consecutive days it is found that only from 1 per cent. to 3 per cent. are released still infective.

Typhoid Fever.—Examinations of blood by the Widal reaction are made for the diagnosis of typhoid fever. The physicians send a drop or two of blood dried on glazed paper. For the examination a sufficient quantity of sterilized water to make a decided amber color is placed on the blood. This corresponds as closely as practicable under the circumstances to a dilution of one in ten. A loopful of this mixed with a loopful of a 24 hours growth of typhoid bacilli from an agar growth of one month old gives a dilution of one in twenty, the dilution ordinarily admitted to be the best under practical laboratory conditions. A hanging drop is then made, an hour being allowed for the completion of the reaction. A typical reaction is where there is a decided clumping of the bacilli, with at the same time a stoppage of motility. Sometimes clumping, sometimes stoppage of motility, is observed. In this case though suspicious the reaction is not looked on as having taken place and a new sample is requested If neither takes place then there is no reaction. A positive result is conclusive evidence of typhoid to the extent of 95 per cent. All typhoid cases do not show the reaction; fully 90 per cent. do though at one time or another during the course of the disease. To insure a continued run of one month old cultures a new agar smear is made each night and kept for the next month's work. The reaction of both the broth and the agar used has to this time been + 15 (1 5 per cent. acid). This method has been found quite efficient for diagnostic purposes. Harris advises + 5 for the broth, as making the reactive power of the bacilli more sensitive. As yet I have not had sufficient experience with the reaction to test its value.

Tuberculosis.—Under this heading sputum from cases suffering from respiratory tuberculosis, discharge from lesions suspected of being tubercular, urine from urinary cases, tissues from animals suspected of having died from this disease, where the meat is exposed for sale as food, are sent to the laboratory. The staining method is the one chiefly used in making a diagnosis. The staining is done on glass slides. In the case of sputum the habit is to take four loopfuls from four of the most suspicious looking portions of the specimen, the same in the case of discharge from other lesions. In the case of urine a preparatory centrifuging is done before taking the four loopfuls. This is stained by the ordinary carbol-fuchsin stain and decolorized by a solution containing 3 parts of HCl in 97 parts of 95 per cent. alcohol, counterstaining with methylene blue If none appear another sample is requested. In the case of discharge from lesions or urine in which the bacilli are not found; it is often difficult to find them by staining in these cases, if other pathogenic organisms are not present in too large numbers the guinea pig is had resort to. In the case of tissues microscopic sections are made by the freezing method and search is made for the lesions so nearly characteristic of tuberculosis. The meat is condemned if the bacilli or the lesions be found.

Malaria.—For the diagnosis of this disease staining of smears of blood on cover-glasses, Futcher's modified method is used as follows:

Fixation in $\frac{1}{4}$–$\frac{1}{2}$ of 1 per cent. formalin in 90 per cent. alcohol, staining in carbol-thionin (50 per cent of alcoholic solthionin 20cc, 2 per cent. carbolic acid sol in water 100cc) for 10 to 15 minutes, wash in water, dry and mount. It has given us good results.

Glanders.—None has been met with during the year. It is rare in this Province. The method employed for its diagnosis is that recommended by Hill, (Twenty-eighth annual report, Boston city,) viz: "Take a swab on absorbent cotton from the suspected mucous membrane of the horse, so as to get as much as possible of the suspected material. This on receipt is shaken thoroughly in 5cc of sterile water." The resulting suspension is injected into the peritoneal cavity of a male guinea pig, and a positive or a negative diagnosis is usually based upon the development or non-development of scrotal inflammation in from two to seven days, after further examination of the tissues in every case for the isolation of the organism. The guinea-pigs frequently die from sepsis before the typical lesions have had time to develop, requiring a repetition of the inoculation.

Rabies—No specimens from suspected rabies have reached the laboratory during this year. The method employed for the diagnosis of this disease is to make an emulsion of about a gramme of the spinal cord or brain of the suspected animal in 10 cc of sterilized water. This is filtered through cotton and afterwards paper and injected subdurally into the cranium of a rabbit. The dura is exposed by trephining a full grown rabbit at a point just posterior to a line joining the centres of the eyes. The diagnosis is made on the appearance of paralysis or convulsions after fourteen days, if other diseases can be excluded by the autopsy and cultures from the organs and blood. Two animals at least should be used, on account of accidents from contamination and other infections. In the meantime if the original specimens have arrived in a good state of preservation some of the basal or the dorsal root 'ganglia' are hardened and sectioned after Ravenal's method for the rabetic tubercles, which appear in place of the degenerated ganglion-nerve cells. Their presence makes at least good confirmatory evidence.

Influenza.—This is examined for both directly from the swab and secondarily by culture, using media smeared over with human or with pigeon blood.

Anthrax—The organs, preferably the spleen of the animals having died suspected of this disease, are taken out with all possible aseptic precautions. From these smears for staining are made. At the same time teased portions are placed subcutaneously into guinea pigs, and inoculations made on the various culture media. The diagnosis is made on the characteristic morphology and cultural peculiarities of the primary sowings, and in the recovery of these same organisms from the organs and blood of the experimental animal which usually dies in from 24 to 72 hours. Duplicates and controls are always made.

Actinomycosis.—The method here is,—first the direct examination of the softened centres or discharge from the suspected tissues for the "sulphur granules," second the microscopic after staining the fungus with methylene blue, and finally after hardening in alcohol to section and stain with either picro-carmine or Haematoxylin and then looking for the ray-fungus combined with an epithelicid formation in the tissues affected.

Water.—This is examined physically, chemically and biologically. Under the head of physical examination, turbidity is taken note of especially for the microscopic examination of the precipitates for inorganic substances, but especially for vegetable and animal tissues. The color is taken note of. The odor is looked for as to a possible indication of the source of pollution.

Chemical examination.—In this laboratory since the examinations are carried on chiefly for the discovery of organic pollution, free ammonia, albuminoid ammonia and nitrogen along with chlorine are chiefly, almost exclusively looked for. For the first three the colorimetric system of Nessler is used. The albumenoid material is reduced to free ammonia by treatment with an alkaline permanganate of potash solution. Nitrates and nitrites are reduced to free ammonia by electrolysis by the use of a copper-zinc couple. The nitrogen is then calculated back from the free ammonia obtained.

This examination of course makes no distinction between vegetable and animal pollution, simply shows organic contents and thus shows what kind of medium it might be for the growth of passing-by infective organisms. Allowing for the chlorine standard of the

locality, we lay some stress on the results of the chlorine test as a distinction between vegetable and animal pollution. It gives about as fair an indication as is possible at the present stage of our knowledge, of the presence especially of urine pollution of water. We make it in all specimens of water sent in for examination, using the silver nitrate-potassium chromate method of estimation. Lead and iron or other substances are only looked for when special indications call for such examinations.

In the biological examination of water the chief stress is put on the bacterial search. A count of the number present to the cc. in specimens suitably taken, packed in ice and not over 12 hours in transit, is made. For this purpose for the greater part of the five months I have been in charge, nutrient gelatine, following the recommendation of the Bacteriological section of the American Public Health Association, of a reaction of + 15 (1.5 per cent. acid) was used. For our waters I have found that gelatine, neutral to phenophthalein has given the greater number to the cc. Our habit has been to use three days' growth at 20° C. We have considerable trouble with liquefiers. The rest of the examination is chiefly with the object of finding the colon bacillus. For this purpose Uffalmann's gelatine with lactose (2%) added is used grown at 20°C. The citric acid inhibits the growth of nearly every organism but the colon. On only two or three occasions have I found colonies of cocci. Lenticular gas-bubbles without liquefaction is very suggestive. Purplish blue (reduction of methyl violet) colonies standing up like hob-nail on the surface of plates made with this medium are also suggestive. At the same time inoculation into tubes containing 5 cc. of nutrient broth + 15 reaction to which is added 6 8 drops of Parietti's sol. to check off other forms than colon is made. This for secondary inoculation, if this should be indicated by the above procedure and also the following viz.—the inoculation of Smith-tubes of litmus lactose broth and growth at 37°c. for Co_2 and hydrogen production with an approach to the proportion of $Co_2 : H_2 :: 1 : 2$ with the litmus red. At the same time inoculation of neutral broth is done with a cc. of the suspected water and grown at 37°C. for 3 days for the production of indol. If gas is produced in the first and third experiments, new fermentation tubes are inoculated from the Parietti tube that has grown, and the gas and proportion noted. At the same time litmus milk is inoculated for coagulation and acid production. Then if the following results are obtained colon bacilli, without attempting to relegate them to any special type are pronounced present, viz.:

From Primary Cultures.

1. Uffalmann gas and color colonies.
2. Parietti tubes showing growth having colon morphology and motility.
3. Smith-tubes, gas and approximate proportion of Co_2 to hydrogen.
4. Indol present.

From Secondary Cultures made from highest Parietti.

1. Smith-tube gas and proportion of Co_2 to H_2.
2. Milk coagulation and acidity.

Note is also taken of faecal odor.

If all these are present we take it that the colon bacillus is present.

If in addition to this, there is a high bacterial count and a large quantity of chlorine present the water is condemned.

Preparation of Media. Media is prepared after the recommendation of the Bacteriological Section of the American Public Health Association as reported in 1895, except as to the immediate technique. In this I have followed Dr. H. W. Hill's method for the three principal media (broth, gelatine and agar), (Twenty-eighth Annual Report of the Health Department of the City of Boston).

Storage of Media This is done in a specially constructed refrigerator. This has its ice contained at an upper corner, the cold air dropping downwards then rising up the other side, repassing over the ice again and again. It keeps the air dry enough not to evaporate too rapidly and sufficient not to have tube always moist and sticky as in older form of refrigerator.

Tabular statement of work done in the laboratory during the year. In all there were examined in the laboratory 1,669 specimens. These were divided as follows :

Sputum in cases suspected of tuberculosis			703
Exudate " "	diphtheria		526
Blood " "	typhoid fever		221
Water for bacteriological examination			194
Water for chemical examination			33
Sewage for discovery of changes from treatment			7
Ice for bacteriological examination			2
Milk for bacteriological examination			4
Tissues from meat—supplies suspected of	tuberculosis	4	
" "	actinonycosis	2	
" "	anthrax	4	
" "	unknown	2	12
			1,669

Table showing by months the number of examinations made under each of the above headings.

Months.	Tuberculosis.	Diphtheria.	Typhoid fever.	Bacteriological water.	Chemical water.	Sewage.	Ice.	Milk.	Tuberculosis in meat.	Actinomycosis in meat.	Anthrax in cattle.	Unknown and none discovered	Total for each month.
January	53	59	22	1	0	2	0	0	0	0	0	0	137
February	59	45	9	0	2	0	0	0	0	0	0	0	115
March	69	22	17	0	0	0	0	0	0	0	0	0	108
April	57	20	12	0	0	0	0	0	0	0	0	0	89
May	69	30	7	5	0	1	0	0	0	0	0	0	112
June	84	12	13	3	2	0	0	0	0	0	0	0	114
July	54	51	11	3	3	0	0	0	0	0	0	0	122
August	42	28	24	18	4	2	2	1	0	0	4	0	125
September	37	23	30	56	7	2	0	2	1	0	0	0	158
October	68	79	38	32	6	0	0	0	0	0	0	1	224
November	57	88	19	17	5	0	0	1	2	1	0	1	191
December	54	69	19	26	4	0	0	0	1	1	0	0	174
Totals	703	526	221	161	33	7	2	4	4	2	4	2	1,669

Tuberculosis.—There were examined during the year 703 specimens of sputum from patients suspected of having tuberculosis, of these 271 showed the presence of the bacilli of tuberculosis. Blank cards asking for the name, age and sex of the patient, the physician's name and address, the date of first symptom, the present symptoms, and finally the suspected source of infection. It is required that these data be given for statistical purposes. With 480 of the above 703 specimen cards were sent. After this year no examinations will be made free of charge unless these cards properly filled out are sent with them.

Of these 480 specimens giving records, 216 were from male patients, and 264 from female patients. Again of the 480 specimens 170 showed the bacilli of tuberculosis.

Table showing the ages with sex of the 170 positive cases

Sex.	5-10 years.	11-15 years.	16-20 years.	21-30 years.	31-40 years.	41-50 years.	51 on years	Total of each.
Male	1	0	13	28	16	14	7	79
Females	0	0	16	33	20	8	9	91
Totals	1	0	29	63	36	22	16	Grand total 170

This table shows the great preponderance of the positives to be between the ages of 20 and 30 years.

Table in months to 24, 3 to 10 years, showing the time at which the bacilli were found from the inception of symptoms.

	Months.																							Years.			
Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	3	4	5	10
Cases	7	18	20	7	8	28	8	11	2	3	1	22	1	2	4	0	0	2	0	2	0	0	0	9	6	5	3	1

This table illustrates well the value of a bacterial examination in the early stages of the disease, when proper treatment with such good chance of cure can be undertaken before it is too late, all but 35 out of the above 170 showed the bacilli before the end of the first year, and 88 of the remaining showed them before the seventh month. The rest of the data given is not sufficiently complete to be of any great value if tabulated.

Diphtheria.—Cultures were made from 526 cases suspected of diphtheria, of these 247 showed the bacilli of diphtheria. An increasing number are being sent in for release from quarantine, though the greater number at the present time are being sent in for diagnosis.

Typhoid.—In all 221 specimens of blood were examined, a positive result was found in 54. Cards were sent in with 141. Of these 26 showed a positive result, giving the Widal reaction typically. In 13 cases a partial reaction was given.

Table showing the days on which a positive result was obtained.

	Days.																								
Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Cases	0	0	0	1	1	0	7	1	2	3	2	2	0	1	0	0	2	1	0	1	1	0	0	1	

Table showing the days on which a partial result was obtained.

	Days.																								
Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Cases	0	0	0	0	0	1	1	1	4	0	1	1	0	2	0	0	0	0	0	0	1	0	0	0	1

Bacteriological examination of water.—194 specimens in all were subjected to a bacterial test. The chiefest stress was put on the discovery of the colon bacillus. This bacillus was shown to be present in 79 specimens. Of these 43 showed a chlorine test considerably above the normal for the district. Thirteen (13) of the specimens in which no colon bacilli were found showed a high chlorine test, but these were all cold weather tests.

Chemical examinations of water.—Thirty-three were done during the year. With very few exceptions all those showing high chlorine showed at the same time high free ammonia, albumenoid ammonia and nitrogen as nitrites and nitrates.

Anthrax.—This was shown to be the cause of death in some cattle which had grazed on land overflown by water from a tannery. It was only after the second examination of these specimens that the organisms were found. For some reason the growth was generally tardy.

Tuberculosis in butchers' meat was found in three out of four specimens presented. All showed the organisms on direct staining.

Miscellaneous Matter.—The sewage was from sewage plants, and these not being yet in working order the tests were of very little value except as indications for the rearrangements of the plants. The rest of the specimens examined showed nothing of any note.

JOHN A. AMYOT,
Bacteriologist.

PART II.

ANNUAL REPORT BOARD OF HEALTH.

PART II.

ANNUAL ADDRESS OF CHAIRMAN OF PROVINCIAL BOARD OF HEALTH.

BY HARRY E. VAUX, M.D., HAMILTON.

GENTLEMEN,—Another year has swiftly passed, and to-day we are again called upon to take up the important duties placed upon us by the Government of our fair Province. As we assemble year by year we are painfully conscious of the absence of faces which had become very familiar and dear to us, and we miss the voices of those who for many years have been closely associated with us in devising and maturing measures which had for their object the prevention of disease.

I am sure I voice the feelings of the older members of the Board when I extend a cordial welcome to the new members who, since the beginning of the past year have taken their seats with us, and I feel quite sure that the same fraternal feeling which has been so conspicuously present in the past will exist in the future.

It would seem appropriate at this, the first meeting of a new year and a new century to take a retrospective glance at what has been accomplished in sanitation, even during the few years of this Board's existence—of the slow, apparently, and yet really rapid education of the public mind in matters pertaining to the elemental principles of hygiene, and of the difficulties and obstacles placed in the way of advanced legislation by those who should have been the most forward in the movements advocated.

I presume the history of our Board and its struggles is the history of all other reform movements. But, gentlemen, standing at the threshold of a new century we can indeed thank God and take courage, for I believe sanitarians stand to-day in a position which a few years ago appeared to be almost beyond their reach. Their efforts are being better known and more appreciated by those whose interests are at stake, and who will not be satisfied until every available safeguard is thrown around those they love. But, gentlemen, fascinating as would be a review of all that has been done in sanitation, and of all that may be achieved by persistent and paintaking effort in the future, I feel that, even had I the ability, this is neither the time nor the place for such an attempt.

During the year which has passed the work of the Board has been largely of a routine character. There have been no serious emergencies to grapple with; although, as appears from the quarterly reports of the Secretary, the year opened and closed with small-pox, and it is still with us. It has indeed been a most remarkable outbreak, existing, as seen by the reports of the Marine Hospital Service, in almost every State of the American Union, with thousands of cases, and a death-rate of only four per cent

Dr. Lindsley, the old and experienced officer of the Connecticut State Board, says: "The most remarkable characteristic of this widespread epidemic is the mildness of its type. In this respect it is unprecedented in the experience of any living observer. Nor can there be found in all the mass of literature on the the subject any account of an epidemic of small-pox in so mild a form, and so free from fatal results Indeed, in many places where it has prevailed the profession for a time has been divided in its diagnosis of chicken-pox or small-pox.

The remarkable feature of this outbreak of small-pox is the persistence of the type. It is true many cases have been severe, and some protracted, but they lacked the essential character of genuine virulence. That this may be and is temporary, and may at any moment be associated with cases of intense virulence, was illustrated last April in the unfortunate outbreak introduced by a traveller from Australia who, in some unknown way, became inoculated on his way to Winnipeg. Within forty eight hours he died of hemorrhagic disease, not diagnosed until after death.

The results were most disastrous. Of persons who travelled with him in the Pullman, a number developed the disease in several places between Winnipeg and Montreal, with fatal results in probably one-third of the cases. But besides these, travellers who occupied the Pullman after the patient was removed contracted the disease from the infected air or bedding of the car. The disease spread at Port Arthur and Fort William to several points along the C. P. R, and required the most vigorous measures to be adopted by our Board before it was finally stamped out.

It is a remarkable fact that during the past year in Ontario we have had at least twenty distinct centres of the disease. In every case the invasion has been promptly and

completely stamped out, whilst in the neighboring States the disease has remained continuous for over two years. This very satisfactory showing is evidently due to the close union existing between the Provincial Board and the Local Boards of Health, whereby on the first note of danger being sounded, prompt and concerted action is taken by our very efficient Secretary and the local municipality where the disease has appeared.

In the matter of other contagious diseases the monthly reports, which are issued by our Board, show a very satisfactory state of public health, except in the case of typhoid fever. In the last issue of THE CANADIAN JOURNAL OF MEDICINE AND SURGERY there appears a very timely article by our confrere, Dr. J. J. Cassidy, on "Typhoid in Foul Wells." In it attention is called to the prevailing neglect of the requirements of the Act providing for the yearly cleansing of wells. Ordinary pollution by the top, as illustrated by that article, is indeed very common,and in this way doubtless the B. coli becomes an ordinary inhabitant of many wells, but the pollution by soakage of animal excreta is of a permanent character, and is a matter demanding more general enlightenment than at present commonly exists, especially in rural districts. The question which naturally presents itself to the mind after reading examples given in the article just referred to, as well as many familiar to ourselves, is whether the mere presence of the B coli in potable waters fulfils all the conditions necessary to an outbreak of typhoid. The question of the influence of temperature and rainfall on typhoid is a matter of much importance, and one which, after the experience of the past autumn, demands to be studied yet more closely, along with the biological factors, than it has hitherto been.

Other diseases, as scarlet fever and diphtheria, have not shown any notable prevalence as a whole, and it is gratifying to find that diphtheria in 1900 has again fallen below the previous years. An exception to this general statement must be made, however, in the caseof the city of Toronto, where, estimating the population at 200,000, with 149 deaths, the rate was 74 for 1,000 ; whereas, other cities in Ontario, with populations of 260,000, had only a death-rate from diphtheria of 60, or .23 per 1,000. This is the more remarkable, inasmuch as the total mortality from diphtheria in the Province for the year 1900 was 486, of which Toronto supplies nearly one-third. This new year already gives a mortality of 21.

Perhaps of all subjects which to-day press themselves upon our attention as a Board, is that ever present one, the restriction of tuberculosis. The members of the Board cannot be unmindful of their long and continued efforts for many years to keep this disease in its many phases before the attention of the public. I learn from the Registrar's Report just published, that 1899 again shows an increase in mortality, and even the monthly reports for 1900 seem to show rather an increase than a diminution of this class of deaths. The public has become greatly agitated over this matter, and from all classes of the community the cry comes: What can be done to save our loved ones from this terrible scourge?

There can be no doubt that, if we may judge from the immunity of tribes dwelling in tents—the Bedouins of the desert, and of those people who live in open houses in Southern climates—the one panacea is fresh air.

Sir F. Broadbent, President of the British Association for the Prevention of Tuberculosis, has said that if people could be induced to live with their sleeping-room windows partly open, the deaths from tuberculosis would be decreased one-half in a year.

Making due allowance for such general statements, the very difference in germ percentage between out-door and in-door air illustrates the point in this remark. Hence, in the cottages of our work-people, in their work-shops,in factories, in schools, indeed everywhere, the problems of how to maintain the purity of the air precedes all others.

See what it means. Over the sea Miquel says there are but six germs per cubic metre of air. In a new house (in Paris), 7,000; in an old house, 37,000 ; and in a hospital, 78,000 ; and out-door air, even in cities, is always more pure than that in houses. The problem becomes at once one for municipal authorities to recognize and endeavor to solve by the enforcement of sanitary by-laws for schools, factories, and shops of every kind. From the standpoint of cure, we have as physicians quite generally accepted the new creed, and the air cure sanatorium has taken firm possession of the public mind.

The action of the Legislature last session, as embodied in the excellent bill introduced by the Hon. Mr. Stratton, whereby municipalities are aided and encouraged to erect sanatoria, must be very gratifying to this Board, as it so completely falls in line with the

views which for years we have been advocating. And as further evidence of the importance which is being attached to the subject, I need only refer to the fact that a conference, under the distinguished patronage of their Excellencies the Earl and Countess of Minto, is to be held in Ottawa on the 14th inst. to take concerted action in meeting the ravages of tuberculosis, and I trust that representatives from this Board will be sent in response to invitations received.

REPORT OF SECOND QUARTERLY MEETING OF BOARD.

Mr. Chairman and Gentlemen : MAY 8th, 1900.

The past quarter, generally the most unhealthy of the year in Canada, has not been marked by specially high death rates in the several common contagious diseases.

Smallpox —Of these, however, smallpox has continued to cause your committee much anxiety. The outbreak in Essex was practically suppressed when the Board last met ; but this immunity was only for a moment, as new cases were imported from Detroit as per the following statement contained in a circular sent out at the time :

TORONTO, March 8th, 1900.

DEAR SIR : In compliance with the resolutions adopted at the Conference of State and Provincial Boards of Health, held at Toronto, October 6th, 1886, respecting Inter-State notification of contagious diseases, I beg to make the following statement regarding the prevalence of smallpox in Ontario at the present time.

County.	Municipality.	Date of outbreak.	Source.	Cases.				Remarks.			
				Total.	Still sick.	Died.	Recovered.	Houses infected.	Houses at present infected.	Isolated in hospital.	Isolated in private houses.
Essex	Amherstburg	Feb. 20	Detroit.	3	3	....	...	2	2	.....	3
"	Malden	" 23	"	1	1	....	....	1	1	.....	1
"	Mersea	" 23	"	1	1	....	....	1	1	.....	1
"	Sandwich, E	" 27	Unknown	1	1	....	....	1	1	.....	1
Middlesex	Mosa	" 17	Indiana	1	1	....	....	1	1	.....	1
"	Lobo	Mar. 6	Detroit.	1	1	....	....	1	1	...	1
York	Toronto Junct	Jan. 15	Unknown	16	15	....	1	4	...	15	....
"	Toronto City	Feb. 13	Toronto Junct.	2	2	....	...	2	1	2	....

I have the honor to be, Sir,

Your obedient servant,

PETER H. BRYCE,
Secretary.

These repeated outbreaks call for more than a passing notice, since they involve a serious expenditure on the part of municipalities.

From October, 1898, smallpox has been brought into the Province from Michigan directly or indirectly as follows :

1898—	*Kent*—Camden	1
	Chatham	1
1899—	*Essex*—Colchester Tp	1
	Walkerville	1
	Sandwich	1
1900—	*Essex*—Amherstburgh Town	1
	Malden Tp	1
	Mersea Tp	1
	Sandwich E	1
	Walkerville	1
1900—	*Middlesex*—Caradoc Tp	1
	Sarnia	1
	Mosa Tp	1
	Lobo Tp	1

It thus appears that within a period of 18 months, fourteen (14) distinct introductions of the disease into Ontario from Michigan have taken place, occasioning outbreaks in 20 municipalities. What some of these outbreaks have cost is illustrated by the following figures obtained from returns made by the Local Boards of several municipalities :

Essex County :	
Rochester Tp	$1,824 22
Tilbury, N	339 00
Tilbury, West	1,122 20
Maidstone	1,016 81
Colchester, N	426 53
Prescott and Russell Counties :	
Hawkesbury, East	1 658 00
Hawkesbury Town	223 00
Vankleek Hill	392 48
Plantagenet, N	414 88
Leeds and Grenville Counties :	
Wolford Tp	1,150 00
Stormont, D & G. :	
Osnabruck Tp	698 00
Cornwall Town	577 76

Remembering the fears which periodically reach this Board whenever a case occurs in Ontario, lest it should be allowed to transmit cases to Michigan, and possibly Detroit; remembering at the same time that such transmission of a single case during ten years cannot be recalled to your committee, such a chronicle might naturally call for a satirical commentary. But it has for many years been considered by your committee that no sanitary or commercial interest is served by attempts to restrict traffic either local or railway at the border and that the best quarantines of safety are the efficient action of the state and municipal authorities where outbreaks occur, and a cordial understanding and co-operation between officials for information to assist in the tracing of suspects.

While it is satisfactory indeed to know that the disease has with so many opportunities to spread been stamped out in so many outbreaks, and that with the exception of cases introduced from the west coast causing outbreaks, there is no smallpox in the Province, it is apparent, inasmuch as our border municipalities must always bear the brunt of such outbreaks and their consequent expense, that the question of what part the quarantine authorities might perform in preventing such outbreaks or if not preventing, at any rate supplying hospital facilities as at the sea-ports for caring for them, is a pertinent one. The sea-port quarantines are fully organized and equipped, while Customs officers are charged with nominal powers as officers at various ports of entry.

It is understood that a quarantine medical inspector is quartered at Emerson, the entrance to Manitoba, for dealing with cases of smallpox; but so far Ontario receives no assistance although the danger from the number of travellers is manifestly much greater than in the west.

In the submitted communication the matter has been referred to in a letter to the Director of Public Health, Ottawa, from whom a reply has been received.

It would seem proper that the matter should receive further attention through the proper official channels, should the Board so recommend.

Scarlatina and Diphtheria. As may be seen by the reference to the monthly statement of deaths, scarlatina has shown a reduction during the winter months of exactly one-third from that of 1899; while diphtheria shows much the same distribution and number of cases. The annual mortality from both, based on these figures, is remarkably low compared with past years and other countries.

Measles and Whooping Cough. These diseases have shown in March of this year a marked prevalence, deaths from measles amounting to as many as scarlatina, Toronto alone having eleven deaths or half the whole in the Province. In many places measles has been associated with rotheln or German measles, occasionally in adults assuming a severe type. The problem of dealing with measles as thoroughly as with other eruptive

diseases has not yet been solved, the enforcement of our municipal methods seeming as yet not to be sufficiently great to meet the needs of the case.

Whooping cough shows a very low mortality, almost 50 per cent. less than that of 1899.

Tuberculosis. This disease has shown during the quarter a rather less mortality than in 1899. It will be remembered that the quarter in 1899 was the severest winter for a number of years and that influenza became epidemic in some districts. The weather of the present quarter has in many ways been normal and shows that 558 deaths from pulmonary consumption occurred. The importance of this figure to the Board is seen when the total deaths from scarlatina, diphtheria, small-pox, whooping-cough and measles is seen to have been but 254, or less than one-half the total from tuberculosis. The figures in all cases represent 90 per cent. of the total population of the province in 1900, and 93 per cent. in 1899. There seems some evidence that there is a slight tendency for the deaths from tuberculosis to follow the very definite decrease shown on the other contagious diseases, but it is scarcely perceptible. The marvellous fact is seen that if this disease had followed the same course since 1882 that the others have done there would have been saved to the Province in lives this year some 4,000 persons, or the total mortality of Ontario would have been reduced nearly 18 per cent. from these causes alone. It is with peculiar satisfaction that your committee can refer to the fact that the Legislature has passed at the session just ended a bill which in its comprehensive character exceeds any legislation known in any other country for dealing systematically with tuberculosis. Its provisions are simple, clearly setting forth how county municipalities are to proceed to deal with the question of establishing sanatoria for the tuberculized. Naturally they are designed especially to help Local Boards of Health in dealing with the cases of persons of limited means,—the wage earning class,—where but little provision is possible for supplying the family of a man unable to work.

The part which this Board has had in educating the public of the Province in this matter is best seen in the Annual Reports, especially of the last ten years.

Its contagious character, its dependence upon denseness of population, its persistence in any house which has once become a centre, its close association with crowding in certain indoor occupations, its prevalence amongst workmen in certain trades—as stone-cutting, tool-grinding, etc., and all occupations which lessen general health, have been again and again set forth. The public as well as the profession are aroused to these conditions and need for action ; but perhaps even more aroused as to the possibilities of cure and of charitable means for assisting this cure by establishing sanatoria. The work begun in Toronto for the establishment of an Association for promoting such sanatoria will, it is hoped, spread rapidly, and your Committee trusts that the Board will continue to lend its active assistance individually and as a Board to the promotion of this work of prime necessity.

Respectfully recommended,

P. H, BRYCE.
J. J. CASSIDY.

THIRD QUARTERLY REPORT OF SECRETARY.

August 12, 1900.

Mr. Chairman and Committee of Toronto Board of Health :

Your Secretary begs to report with pleasure the present complete freedom of Ontario from smallpox. It will be remembered that owing to a case on the C.P.R. train entering Winnipeg an outbreak had occurred there, and an extensive outbreak had resulted therefrom at Thunder Bay and Arnprior. Within a few days a case from that same source appeared at Carleton Place and a number of cases in Montreal.

These points were soon under control, when a sudden and extended outbreak occurred at Port Arthur, and from it cases at the Sault, at Fort William, at Saw Bill mines, and later at Wolfe River, the source being an undiagnosed case in the person of a contractor of Port Arthur, who had recovered and been abroad in the town a week before the second group of cases appeared.

The following fortnightly reports exactly state, the dates of outbreaks and their number at the different points.

As many persons had been exposed to the convalescent in hotels and on the street, as may be supposed, something like a panic existed at the time of my visit, due to an urgent telegram on May 22nd.

One physician had gone to the quarantine station with the patients and only one was left to attend to all health and medical duties. Business had been greatly interrupted, several hotels being under quarantine.

TORONTO, May 2nd, 1900.

DEAR SIR,—In compliance with the resolutions adopted at the Conference of State and Provincial Boards of Health, held at Toronto, October 6th, 1886, respecting Inter-State notification of Contagious Diseases, I beg to make the following statement regarding the prevalence of small-pox in Ontario at the present time.

County.	Municipality.	Date of outbreak.	Source.	Cases.				Remarks.			
				Total.	Still sick.	Died.	Recovered.	Houses infected.	Houses at present infected	Isolated in hospital.	Isolated in private houses.
Essex	Walkerville.....	April 18.. ..	Detroit	1	1	....	....	1		1	....
Renfrew	Arnprior	April 28	.....	1	1	....	....	1	1	....	1
Thunder Bay	Port Arthur	May 1.....	.....	1	1	....	....	1	1	1	....

The Arnprior and Port Arthur cases were exposed on a Canadian Pacific train from Vancouver, from which the cases in Winnipeg, Manitoba, arose.

I have the honor to be, Sir,
Your obedient servant,
PETER H. BRYCE,
Secretary.

TORONTO, May 18th, 1900.

DEAR SIR,—In compliance with the resolutions adopted at the Conference of State and Provincial Boards of Health, held at Toronto, October 6th, 1886, respecting Inter-State notification of Contagious Diseases, I beg to make the following statement regarding the prevalence of small-pox in Ontario at the present time.

County.	Municipality.	Date of outbreak.	Source.	Cases.				Remarks.			
				Total.	Still sick.	Died.	Recovered.	Houses infected.	Houses at present infected.	Isolated in hospital.	Isolated in private houses.
Renfrew	Arnprior	April 28....	C.P.R. train from west.	1	....	1	....	...	....	....	....
Thunder Bay	Port Arthur.....	May 1.... ...	do	2	2	....	....	1	1	2	....
Lanark	Carleton Place....	April 25.....	do	3	3	....	....	2	2	3	....
Simcoe	Collingwood	May 12	Michigan...	1	1	. ..	....	....	....	1	....

Walkerville Town declared free of small-pox on May 14th ; Arnprior Town declared free on May 11th. The Collingwood case was brought into port by a steamer.

I have the honor to be, Sir,
Your obedient servant,
PETER H. BRYCE,
Secretary.

TORONTO, June 1st, 1900.

DEAR SIR,—In compliance with the resolutions adopted at the Conference of State and Provincial Boards of Health, held at Toronto, October 6th, 1880, respecting Inter-State notification of Contagious Diseases, I beg to make the following statement regarding the prevalence of small-pox in Ontario at the present time.

County.	Municipality.	Date of outbreak.	Source.	Cases.				Remarks.			
				Total.	Still sick.	Died.	Recovered.	Houses infected.	Houses at present infected.	Isolated in hospital.	Isolated in private houses.
Simcoe	Collingwood	May 12	Michigan	1	1	...	....	....	....	1	....
Lanark	Carleton Place	April 25	U.P.R. train from west.	6	4	2	....	4	....	4	....
Thunder Bay	Port Arthur	May 1	do	10	7	2	1	4	....	7	...
do	Fort William	" 8	Port Arthur	3	2	1	....	3	....	2	....
do	Saw Ed Mining District	" 8	do	1	1	....	..	1	1	....	....
Algoma	Sault Ste. Marie	" 8	do	5	2	1	....	2	2	2	....

The cases at Fort William, Sault Ste. Marie and the Saw Ed Camp arose from an undiagnosed case at Port Arthur.

I have the honor to be, Sir,
Your obedient servant,

PETER H. BRYCE,
Secretary.

TORONTO, June 27th, 1900.

DEAR SIR,—Since last report, dated June 1st, there have been in the Province of Ontario two new cases of small-pox and one death, all at Port Arthur. No new cases have occurred since June 12th.

I have the honor to be,
Your obedient servant,

PETER H. BRYCE,
Secretary.

FOURTH QUARTERLY REPORT OF THE SECRETARY.

TORONTO, OCT. 15TH, 1900.

To the Chairman and Members of the Provincial Board of Health.

GENTLEMEN,—Your Secretary begs leave to report on the general health conditions of the Province for the past quarter. In the monthly report of the Registrar General it will be noted that typhoid fever has shown an increased prevalence, especially in September, there being 54 deaths reported from 85 per cent. of the population, while in 1899 there were but 55 deaths from 99 per cent. of the population. As will be found, the Laboratory report shows an unusual number of applications for analyses in connection with outbreaks of typhoid fever. The places where deaths have occurred are as follows :—

1 Woodstock
1 Blanchard Twp.
1 Renfrew Twp.
1 Tay Twp.
1 Lindsay
1 Wiarton
3 Ottawa
1 Berlin
1 Derby
1 Tilbury
1 Richmond Hill
1 Galt
1 Carlton Place
2 London
1 Reach
1 Blenheim Twp.
1 W. Hawkesbury
1 Orillia
1 Winchester Twp.
2 Sault Ste. Marie
1 Erin Twp.
1 Hamilton
2 Windsor
1 Dresden
1 Osborne
3 Toronto
1 Romney
1 St. Catharines.
1 Oshawa
1 Peterborough
1 S. Himsworth Tp.
1 Cornwall
1 Cornwall Tp.
3 Brantford
1 Brant Tp.
1 Nichol Tp.
1 Owen Sound
1 Ridgetown
1 Stephen
1 Wainfleet Tp.
1 Camden Tp.
2 Strathroy
1 E. Whitby Tp.

It will be apparent that these are endemic outbreaks rather than any epidemic appearance of the disease. The interesting fact would seem to be that in nearly every instance where analysis of water has been made, the pollution of well water by animal organic matter has been apparent.

Diphtheria.—The month of September shows a very marked advance in deaths from Diphtheria as compared with 1899, there being 49 deaths for a population of 85 per cent., as compared with 21 deaths for a population of 39 per cent in 1899. An analysis shows that an unusual percentage of these occurred in Toronto, there being 16 out of the 49, or more than one-third. A further examination of the returns of past months as set forth in the following table shows that there has existed in Toronto during the past year a general tendency toward an increase in Diphtheria, as judged by the mortality returns. Relatively to the other cities the rate per 1,000 has also been higher. What is interesting is that the summer months show no falling off in deaths either in 1899 or 1900

	May	June	July	August	September
1899	5	5	7	10	4
1900	12	10	12	12	16

In 1899 the rate per 1,000 was 0.46 in Toronto. In 12 other cities the rate per 1,000 was 0.17. The total deaths in Toronto for the 9 months of 1900 were 102. The total for the 12 other cities 32. If the prevalence of these months is continued the rate would be notably above *the average for several past years.*

Deaths by Months from Diphtheria in Cities, 1899.

Cities	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Toronto	2	13	9	9	5	5	7	10	4	7	12	9	92
Brantford	0	0	0	0	0	0	0	0	0	0	0	0	0
Ottawa	2	0	0	1	0	0	2	0	1	9	3	2	21
St. Thomas	0	0	0	0	0	0	0	0	1	0	0	0	1
Kingston	0	0	0	0	0	0	0	0	1	0	0	0	1
Windsor	0	0	0	0	0	0	0	0	0	0	0	0	0
Belleville	1	0	0	0	0	0	0	0	0	0	0	0	1
Chatham	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Catharines	0	0	0	0	0	0	1	0	0	0	0	0	1
London	1	0	0	2	0	3	1	1	0	0	1	0	9
Stratford	0	0	0	0	0	0	0	0	0	0	0	0	0
Guelph	1	0	0	0	0	0	0	0	0	0	0	0	1
Hamilton	2	0	0	0	1	1	0	0	1	0	1	3	12

Deaths from Contagious Diseases in Ontario by Cities for Year 1900.

——	Scarlatina.	Diphth.	Measles.	Wh. Cough.	Typhoid.	Tuberc.	
Brantford	1	1	1	1	12	27	43
Ottawa	10	31	2	18	16	101	178
St. Thomas	6				1	5	12
Windsor	1				8	7	16
Kingston	7	1		1	3	44	56
Belleville	2				2	14	18
Chatham		2			1	14	17
St. Catharines		2	1		6	21	30
London	3	6			12	49	70
Stratford	2				4	12	18
Guelph	2	1			3	14	20
Hamilton	6	16	6	1	16	67	112
Toronto	24	149	34	8	31	331	577

Toronto ..... pop. 200,000, Diphth. deaths 149=0.74 per 1,000.
Twelve other cities..... pop. 260,000, Diphth. deaths 60=0.23 per 1,000.

Total Deaths for Year 1900 from Monthly Reports—25,383.

93 per cent. of population reporting.

The following Table shows Deaths from Contagious Diseases during the year :—

Scarlatina.	Diphtheria.	Measles.	Whooping Cough.	Typhoid.	Consumption.
133	486	93	121	550	2,360

Deaths from Contagious Diseases by Months :—

——	Scarlatina.	Diphtheria.	Measles.	Wh. Cough.	Typhoid.	Consumption.
January	13	51	2	4	16	183
February	14	39	7	3	13	186
March	23	34	22	7	16	188
April	15	24	27	11	9	203
May	8	27	13	8	15	239
June	6	30	1	7	11	200
July	9	44	9	7	15	264
August	8	31	1	14	44	180
September	3	42	2	20	58	172
October	8	44	2	10	120	169
November	12	50	3	20	141	161
December	14	70	4	10	92	215
Total	133	486	93	121	550	2,360

Total Deaths by Months from all causes :

Jan.	Feb.	Mch.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1,771	1,962	2,330	2,311	2,162	1,752	2,021	2,371	2,490	2,056	1,984	2,172

Total, 25,382.

1900. *Deaths by Months from Diphtheria in Cities* 1900.

Cities.	Jan.	Feb.	Mar.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
Toronto	8	10	11	11	12	10	12	12	16	....	....	....	102
Brantford	0	0	0	0	0	0	0	1	0	....	....	....	1
Ottawa	3	4	3	0	3	0	2	0	0		....	....	15
St. Thomas	0	0	0	0	0	0	0	0	0	....	....	....	0
Windsor	0	0	0	0	0	0	0	0	0	....	....	....	0
Kingston	0	0	0	0	1	0	0	0	0	....	....	....	1
Belleville	0	0	0	0	0	0	0	0	0	....	....	....	0
Chatham	0	1	0	0	0	0	0	0	....	....	....	....	1
St. Catharines	0	0	0	0	0	0	0	0	1	....	....	....	1
London	1	0	0	0	0	2	1	0	1	....	....	....	5
Stratford	0	0	0	0	0	0	0	0	0	....	....	....	0
Guelph	0	0	0	0	0	0	0	0	0	....	....	....	0
Hamilton	0	2	1	1	0	1	3	0	...	...	....	....	8
													134

Nine months, total deaths for Province (only half returns in for Sept.) 280.
Toronto, death rate for 1900, 0.68 per 1,000.
Twelve other cities, death rate for 1900, 0.18 per 1,000.

Deaths from Diphtheria in Toronto for 9 months, 1899 *and* 1900.

Month.	1899.	1900.
January	2	8
February	13	10
March	9	11
April	9	11
May	5	12
June	5	10
July	7	12
August	10	12
September	4	16
	64	102

Small-Pox The Province is once more to be congratulated on being free from a single case of small-pox at any point. Remembering that it has existed for two years continuously in Michigan, from whence 20 distinct introductions have occurred, and that it has also been present in Ohio, Pennsylvania, and parts of New York State, this position is very satisfactory.

The Quarantine authorities of the Dominion, during the navigation season, have maintained officers at ports on the upper lakes, with satisfactory results; but this Board is notified as per letter of the Director General of Public Health, dated October 4th, of the intended withdrawal of these officers. The theory on which defence against introduction by steamboat is provided in this Province, and no means for dealing with cases brought by train or ferry-boat has not yet been explained; but the injustice to local municipalities near the boundary of having the cost of such patients saddled upon them is apparent.

Tuberculosis. The deaths from Tuberculosis during the summer have shown a very marked increase over 1899, there having been in June, July and August 644 as compared with 507 in 1899, or an increase of 27 °/₀. The further remarkable fact is seen that 264 deaths occurred in July, or 50 °/₀ more than in 1899. The explanation of such an increase is difficult, as the population reported upon is nearly the same; but what is more serious is the increase of 27°/₀ over a period so long as three months. How different such conditions are from those which have marked diphtheria during the past 15 years is seen from the fact that while in 1887 there were 1786 deaths due to diphtheria, there were in 1899 but 363, for which the advance of science and preventive medicine may fairly be credited. The following is a comparative table of the deaths from tuberculosis, by months, for 1899 and 1900 in the different cities in the Province.

1899. *Deaths by Months from Tuberculosis, Cities.* 1899

City.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Toronto	22	33	33	30	36	22	34	20	26	36	17	9	324
Brantford	1	4	1	4	3	1	2	2	3	2	2	2	29
Ottawa	10	8	12	8	6	11	12	11	8	7	7	9	105
St. Thomas	0	0	2	0	0	1	0	0	0	1	1	1	6
Kingston	4	1	3	6	4	3	2	1	4	4	0	2	34
Windsor	2	0	1	0	0	1	1	1	1	2	0	3	12
Belleville	1	0	0	3	3	1	1	0	0	1	0	0	10
Chatham	2	2	2	2	1	2	0	1	2	3	0	0	17
St. Catharines	0	1	1	4	1	0	3	2	1	0	2	0	15
London	4	2	2	12	6	7	4	5	4	8	6	8	70
Stratford	0	2	0	4	2	0	0	1	1	1	0	2	12
Guelph	0	2	2	2	1	2	5	3	3	0	0	1	16
Hamilton	11	10	3	8	8	5	4	2	4	5	0	2	67
													811

1900. *Deaths from Tuberculosis, by Months, Cities.* 1900.

City.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Toronto	27	18	32	27	31	30	33	31	22				244
Brantford	4	3	2	2	2	2	1	4	2				22
Ottawa	7	10	8	12	13	7	5	5	7				74
St. Thomas	2	1	0	0	0	0	0	0	2				5
Kingston	5	3	3	7	1	3	3	3	2				30
Windsor	1	0	0	1	1	1	1	0	2				7
Chatham	3	2	1	1	1	1	1	2	0				12
Belleville	1	2	2	4	1	2	0	1	0				12
St. Catharines	1	0	1	2	2	1	1	0	6				14
London	4	3	5	4	5	8	4	6	1				70
Stratford	0	1	0	1	0	4	2	1	1				10
Guelph	0	2	0	1	0	2	1	4	1				11
Hamilton	6	5	3	6	8	4	6	7	1				47
													529

These include only deaths due to pulmonary tuberculosis.

While these figures show this remarkable increase, a comparison for the whole year does not seem to indicate a proportionate increase of deaths from tuberculosis. In fact it is probable that the cities this year will show a rather relatively less number. This must be looked upon as evidence of the educative effects of Local Boards of Health in regard to the dangers of infection in houses, as well as of an increased knowledge by householders of the methods by which the presence of consumptives in houses may be rendered less dangerous.

In all this municipal work, however, the one great need is systematic financial aid to Local Boards of Health and of officers to assist in the work. Thus, in Buffalo, the warmest American city, the work done, as shown by the Monthly Report, requires a much larger staff than the city officers of Toronto have engaged in the routine work of the Department. There is the plumbing branch, the food and house inspectors, the city chemist, the inspector of food and drugs, the milk and meat inspectors, and a city physician for each of 19 city districts, and a special medical inspector of public schools. While our local boards show, in our larger centres, satisfactory results in some respects, it is apparent that in a growing city like Toronto, much else shall be undone, especially in the matter of medical inspection for schools, if it be not to be expected that the best work is possible.

All of which is respectfully submitted.

(Signed) P. H. BRYCE.

First Quarterly Report of the Secretary (1901).

Feb., 6, 1901.

Mr. Chairman and gentlemen of the Board.

I beg to report upon the public health of the Province, during the past quarter. It has been marked in several particulars by several disturbing elements, the first and most widespread of which was the persistence of typhoid fever in most areas of the Province. Not only was the death rate high as usual in September, but from that month onward it continued to progress very abnormally in fatality.

This will be seen in the following table.

Typhoid Deaths from Monthly Reports 60 per cent. of Population.

	1897.	1898	1899.	1900.
August	22	[illegible]	55	11
September	[illegible]	44	[illegible]	[illegible]
October	45	54	[illegible]	199
November	31	[illegible]	40	141
December	[illegible]	44	[illegible]	92

The cause of this is one of very great interest. The [illegible] entering into the causation of this is an [illegible] cause, or which seem to favour the propagation of the germ of the disease, are drainage, temperature and rainfall, [illegible] as it affects well waters, as shown in the following table for the past 3 years.

The general distribution of the sickness and mortality must be stated.

From early summer to December, the Laboratory was in receipt of water samples from every district of the Province.

These are given by counties in the table submitted.

Mean Temperature and precipitation at Toronto.

	Mean temperature.			Precipitation.		
	18[illegible]	1899.	1900	[illegible]	[illegible]	1900.
				ins.	ins.	
January	[illegible]	[illegible]	19.84	3.650	2.870	1.940
February	[illegible]	[illegible]	20.64	[illegible]	1.730	5.210
March	36.29	27.99	[illegible]	2.400	[illegible]	3.450
April	[illegible]	44.66	45.18	1.695	1.615	1.850
May	54.97	55.12	[illegible]	[illegible]	3.290	[illegible]
June	[illegible]	[illegible]	65.16	1.945	[illegible]	2.425
July	70.50	68.77	68.47	[illegible]	1.020	2.730
August	69.72	69.37	71.57	1.080	0.270	2.745
September	62.80	[illegible]	63.73	[illegible]	5.150	1.425
October	50.29	50.45	55.67	5.770	4.550	2.115
November	[illegible]	40.58	38.29	3.015	1.015	3.895
December	[illegible]	28.89	[illegible]	2.550	2.535	0.830
	[illegible]	45.89	46.89	30.950	28.975	29.590

There seems no room for question as to the close relationship between periods of prolonged drought lowering the ground water and this associated with a long period of mild weather, maintaining into the autumn a high temperature of the ground water, and the prevalence of typhoid fever. That there must be a pollution of wells with animal matters, whether by soakage or by the top of the soil, on both occasions would seem a priori to be necessary, and as I believe borne out by the actual results of analysis.

Unfortunately it is not often practicable to obtain any evidence [illegible] of the [illegible]

soil conditions surrounding wells: but the many variations in the analytical results of wells from the same town show how variable are local conditions judging by analysis.

The distribution of deaths by counties and municipalities is somewhat notable, but no general statement suffices to show the closer relationships existing between the location of wells and the presence of fever. The post glacial deposits of the Province show such a varied distribution that no two wells within any short distances need show the same relationship between sub-soil and surface-soil.

In other words what is needed is a detailed local invesigation of the conditions surrounding every well whence a case of typhoid has seemed to proceed, which must be made if we expect to get much farther in our knowledge of these problems whose solution has proved for many years so elusive. One thing, is however, apparent that is that in centres where population has been growing for years and on certain soils as where sands and gravel are present and lie on top of the clay above which is the water stratum, so certainly do certain seasonal conditions as of last year develop outbreaks of typhoid, which would seem when once started to be spread by various mediums as possibly milk, personal infection, and perhaps through flies and food.

Diphtheria—Has continued to show an increased prevalence over the same quarter in 1899; but as may be expected from its mode of dissemination by personal contact, it has shown a special localized prevalence. As was pointed out in October Toronto has been unfortunate in this respect, the total deaths being 149 out of 209 in all the cities and of 486 for the Province. Ottawa has also shown a notable number of cases and the local board there have greatly felt, as in Toronto, the need for extended isolation hospital provisions.

There seems, as one gathers from time to time facts, little doubt but that there is a tendency to lessen the period of isolation convalescence from the routine period of four weeks, on the ground that the throat has on examination of a swab seemed to be free from the germs of the disease.

The recurrence of cases in the same houses or in cases where the convalescent is again allowed to mingle with the public raises anew the same vexed question of when is a child not dangerous to another. Experience as well as prudence is teaching us that time is an important element with constant dissinfection of mucous membranes in limiting the dangers of spread of the disease.

Smallpox.—Since last summer, when the serious outbreak in Northern Ontario was stamped out, the Province has breathed freely, and viewed with complacency the prevalence of the disease in surrounding States. The fact that in these there is a very irregular attempt to inform the Board of the number of cases existing in the n is perhaps the best evidence of its prevalence in them.

From the very imperfect data collated in the last report of the U.S. Marine Hospital Service for December 3399 cases were reported with 36 deaths, or more than three times the cases at same period in 1899.

It was not possible with so many centres that the Province should for long remain free, and on December 21st telegrams reported the disease as conveyed to "Sault" Ste. Marie from a near lumber camp, and resulted in six cases; one escaped to the American side and four detected in the woods. Your Secretary, owing to the emergency, despatched one sanitary policeman to guard the camps and the Board was called upon to pay for the physician in attendance on the case at the "Soo."

The outbreak was ended only to be followed by a new case from another camp on Jan. 30th, and a similar case reported from an Indian Reservation in the Sudbury District. All these outbreaks have shown a moderate severity in cases, no deaths having so far occurred.

A very similar outbreak was reported on January 7th from Fort William, where a sick man was taken from a "tie" camp in the woods, 100 miles west along the C. P. R. The danger here has been greater as the railroad can be reached at several stations, and as some 400 men were located in four camps it became necessary to vaccinate and police all of them

This work has been under the charge of Mr. McDougall, the Police Magistrate at Fort William, who has worked with energy. In addition to the first case, eight have developed in the woods and a physician has had to be sent there. So far no cases have escaped quarantine, and it is to be hoped that the outbreak is at an end.

The difficulty of dealing with cases at such a distance is great, especially when there is no municipal organization, and the growing frequency of such cases in the rapidly settling parts of Northern Ontario demands that this Board recommend that some systematic measures be adopted for dealing with such outbreaks apart from the cumbrous one of having every case thrown upon the Board for dealing with, at great distances and at the expense of the Board.

Your secretary would urge that the Board prepare such legislation for submission to the Minister, with a view to having a Bill brought in to deal with the matter.

Some idea of the importance of the matter and of the danger to which the general public and the municipalities of the district are exposed may be gathered from the following totals, which Mr. White, Deputy Commissioner of Crown Lands has supplied me with :

Thus in the mines of the five Territorial Districts some 3,000 men are employed, while according to the last returns made to the Crown Lands Department there are in the eleven Districts, in which the Crown Lands are arranged for purposes of inspection, 329 lumber camps with 19,000 men employed.

With regard to the larger question of the exposed position of the Province in the matter of the introduction of smallpox from neighbouring States, we need only refer to the imperfect records already given and to occasional statements direct from State Boards, and to newspaper and medical journal reports, in order to see that the Province must eventually receive cases from time to time from this foreign source. The disease, too, has appeared in Glasgow to a certain extent, and, while mild, it would appear that the elements of a very serious and persisting danger exist.

In view of the state of affairs it would seem that prudence would suggest that as Buffalo is insisting on a compulsory vaccination of school children the Board send out a circular pointing out the serious dangers at present, and increasingly likely to be present during the summer, when hundreds of thousands of persons will be visiting the " Fair " and passing into or through the Province, and urging that the general provisions of the Vaccination Act be enforced.

Tuberculosis —The year has closed and the monthly returns show this disease at least as prevalent as last year, pulmonary consumption having been reportod as causing 2,360 deaths, and 2,315 in 1899 It is gratifying to note, however, that in different quarters there is developing an active interest in sanatoria, and the opening year of the century will see active missionary work begun in several counties toward the end of having Sanatoria established. The activity shown in foreign countries and in neighbouring States is equally remarkable and it would seem as if what the past quarter of a century has done in the matter of the acute contagious diseases the coming decade will do in the matter of tuberculosis In addition to the several admirable private and semi-philanthropic institutions, different State Legislatures have been at work Massachusetts opened a sanatorum in October, 1898, recently reported upon, which was put up at a cost of $181 000 by the State in 200 acres at 1,160 feet height. Its results have been shown to be fully satisfactory. Propositions are now before the New York, New Jersey, Michigan and Pennsylvania Legislatures for establishing similar sanatoria, and other States are also moving in the matter. The development of the larger county unit in public health matters will ultimately prove in this, as in so many other matters, a great advance toward the solution of the many problems which now seemingly are waiting for some larger methods of dealing with them than our Local Board of Health methods in rural areas at least at present permit of. It remains for the Board to move again in what it has before approved of.

All of which is respectfully submitted,

P. H. BRYCE,
Secretary.

REPORT ON SMALLPOX IN THE RAINY RIVER DISTRICT.

June 15th, 1900.

BY C. A. HODGETTS, M.D., MEDICAL INSPECTOR.

P. H. BRYCE, ESQ., M.D.,
Secretary Provincial Board of Health,
Toronto.

SIR,—I have the honor to report that during the past fortnight I have inspected that portion of the Province west of Port Arthur upon the line of the Canadian Pacific Railway, vaccinating along the line of the railroad where necessary between Port Arthur and Rat Portage, and also visiting the districts upon the line of the Atlantic and Rainy River Railroad where several hundred men are employed upon construction work.

Further west I visited the Saw Bill District; after completing my work and there being no train running east for 48 hours, I went on to Winnipeg, Man., the better to ascertain the facts of the outbreak of smallpox in that city, returning east on the first train. I remained over a few hours in Port Arthur.

Owing to the fact that smallpox existed in Port Arthur I found all along the railway a condition of alarm which was more particularly noticeable at those places where workmen were daily arriving, departing to or coming from either the railway or the mining camps.

This alarm was greatly increased by a knowledge of the fact that in one place at least—Saw Bill Lake, the disease already existed having been contracted in the town of Port Arthur and doubt existed, as to how far the miners, who stampeded on the exact nature of the disease being ascertained, had carried the infection.

Having ascertained that a medical man was in attendance on the case at the "Hammond Reef," I first directed my attention to the [illegible] and Lake [illegible] District. With the kind assistance of Mr. Brown the Agent of Messrs. McKenzie & Mann I was able to prevent workmen going in until I had fully ascertained the condition of the men on the works.

I found the doctor on the Eastern Section had been actively engaged vaccinating but owing to the non-arrival of lymph the doctor in charge of the [illegible] Section had not been able to act in this direction. He however commenced the day I was there and has now completed his work as have also the others in charge of the remaining sections. In none of the hospitals were there any infectious cases, a condition of affairs most pleasing to report, and one no doubt largely due to the efficient staff of medical men employed and the good food provided by the firm as also the cleanliness of the camps.

After a most difficult and tedious journey by waggon and canoe I reached the Hammond Reef on Saw Bill Lake where I found Mr. Steele of the Clear Water Company ill with smallpox. He had in attendance Dr. White, [illegible], and a professional nurse from Winnipeg. He had contracted the disease from Mr. Whalen, Port Arthur, having been in his house May 6th last, the rash [illegible] appeared [illegible] of the month. At the time of my visit the patient was walking about and desquamation was nearly complete. I visited Mrs. Steele but I find she had been ill about three days and was undoubtedly suffering from the disease but modified very materially by vaccination some three years old and will I am sure make a speedy recovery.

The house used as an hospital was nicely situated and well remote from any other, the strictest quarantine was maintained by both doctor and nurse. I left a supply of lymph with Dr. White to re-vaccinate those he had done at the mine.

During the progress of my work I have found the people most anxious to avail themselves of the protection afforded by vaccination and not a few Indians have voluntarily come miles to be vaccinated; in all over seven hundred vaccinations, primary and secondary, have been made.

As regards the outbreak in the City of Winnipeg I have to thank the M. H. O. Dr. Inglis for his courtesy and kindness. On visiting the pest house with him I saw some 13 of the cases who were in various stages of convalescence. Many of them had the disease in

the confluent form, particularly was this the case with the nurses, many of whom had never been vaccinated. An evidence of the necessity for the enforcing of a rule for vaccination among this class, at least every seven years is thus given.

Dr. Inglis is of the opinion that the first case (Finlayson) contracted the disease in Honolulou; he entered the hospital and was treated for purpura haemorrhagica,—and the certificate of death so read.

One point I noticed in the history of the cases is the fact that in many of them the period of incubation was prolonged to nearly three weeks and in one it was 23 days.

At the time of my visit the disease was confined to those cases in quarantine, and there is no fear of further infection from that quarter.

Upon visiting Port Arthur I found that there were still six cases in hospital with the Pacific hotel under strict quarantine, since Sunday June 5th when the last case was removed to the pest house. There exists some uncertainty as to the number of persons exposed by this patient, and another week must elapse before the local authorities can speak with any degree of certainty on the matter.

In the meantime all precautions are being taken by the local authorities.

All of which is respectfully submitted.

Yours sincerely,

CHAS. A. HODGETTS.

Toronto, June 12th, 1900.

Report of the Committee on Contagious Diseases for the Quarter.

April 26, 1901.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—The returns for the months of the quarter ending March 31, indicate that the mortality for the period as compared with 1900 has been notably greater. This seems to have been due rather to general diseases of the respiratory type closely associated with the general prevalence of LaGrippe in January. For instance, February with a rather larger percentage of population reporting in 1900 had 236 deaths this year as compared with 186 last year, while the incomplete returns in for March already show more deaths than in 1900. Fortunately, however, the prevalence of the acute contagious diseases has shown no marked increase over the previous year, except that diphtheria has tended upward in March, but scarlatina has rather declined. The exceptional prevalence of smallpox in New Ontario has not shown any mortality notably affecting the deaths from this class. A circular sent out by the U S. Marine Hospital Service Bureau in February has received a large number of replies; but nothing of a statistical nature has yet been published of any special interest. The general prevalence of smallpox shown in the monthly reports from neighboring States has overshadowed all other matters, excepting bubonic plague in San Francisco. The action of the State authorities in bringing pressure on the Marine Hospital Service to suppress information regarding the number of deaths from the plague in that city is creating a feeling of serious alarm. That the disease has been present there for months is now beyond doubt, and that it was for months denied by the civic authorities seems equally evident. The same course of action in regard to smallpox in certain States, towns and, even in Ontario, is not wholly unknown; but as has often been shown, the results of ineffective steps to deal with contagion have again, as often before, been shown to be the same. The action of your Committee on Epidemics in issuing a circular *re* vaccination, as also one on the diagnosis of smallpox, during the quarter has proved of much value in arousing Local Boards in very many instances to a sense of the danger the Province is at present at face with regarding smallpox. The appearance of the disease in over 50 centres at one time presents a condition probably not exceeded within the period of the Board's existence. The cause of the outbreaks will be more specifically dealt with in a special report, but the bearings of the outbreak on the public welfare cannot be lightly overlooked. At New Orleans, in New York, and at one or two other points a notable increase in deaths is seen during March and there are not wanting evidences of an increase in severity in some very recent cases. The serious side of this is that once let the

disease get beyond municipal control in the presence of a number of centres in each, as it has in Missouri, in Ohio, in Kentucky, in Tennessee, in Kansas, in Minnesota, in Wisconsin, and other States, and the cost of any serious attempt to stay the disease will be found exceptionally great, and even impossible, while an increase in malignancy will soon result in disaster, to which the present generation is almost a stranger. That this is possible, indeed very probable, is found in the fact that in every outbreak in our counties, as in neighboring States, there has been found an alarming number of persons wholly unprotected by vaccination. Amongst the men of the northern lumber camps this has been especially noted in the cases seen in the hospital camp at Sudbury. Apart from the personal interest, the commercial interests of the companies employing large numbers of men can hardly be appreciated by any not brought into immediate contact therewith. Assume that in a great dry-goods house with hundreds of employees, an undiagnosed case has been present, that thousands of buyers have unconsciously been exposed, as has time and again happened in other cases ; or that in a great factory the workmen, breathing the same air, are exposed to a similar case, and we can appreciate the loss of business and panic which follows. On the other hand let employer and employees realize that in vaccination everyone is not only protected against infection introduced amongst them but that further they will thereby protect any customers who visit their establishments, and the public will understand how valuable, even from this low standpoint, vaccination is. What a responsibility rests upon those who agitate against the general vaccination of all children we can learn from the past ; and, unfortunately, it would seem as if we are about to have the lesson repeated. Many Boards approach the matter of general vaccination from a standpoint of expediency, questioning, not its utility, but its necessity, attempting to measure this by the degree of proximity of smallpox cases and assuming that in any small expenditure they will be supported only if the danger be near enough to give them the support of the public. It may be that we require to again have the lesson taught, but we may pray that it be not too severe a one.

This reference naturally introduces the subject of vaccines. Every outbreak brings up the subject of what is normal vaccination, and, unfortunately, the absence of municipal provision for the appointment of public vaccinators has not supplied the younger members of the profession with any correct notions of what vaccination is, either in theory or practice. This has been caused further, in part, because a practitioner when he vaccinates does not insist on having the patient return for evidence of 8th day inspection of its success, in order that he may grant a certificate. Worse, however, than this, the fact has, even in towns where smallpox is present, been developed that medical men in more than one instance have given certificates for successful vaccination where they have never performed the operation, or have given a white powder to be placed on the tongue and have called this vaccination.

In view however of the *severe* and *mild* and other terms which are applied to vaccination it would seem proper that the Board should once more indicate in the light of its experience of years, what the law demands in the matter of vaccination, and of what the highest scientific authorities and clinicians teach.

The Vaccination Act demands that a child shall within three months of birth be taken to the medical practitioner for the purpose of being vaccinated, and the practitioner is required to vaccinate the child. Upon the eighth day following the vaccination the child shall again be taken to the practitioner by whom the operation was performed in order that he may by inspection ascertain the result of the operation. If successful upon inspection the practitioner shall give a certificate to that effect.

Fortunately, in this matter, modern science has developed nothing leading us to the belief that the law of 30 years ago calls for a practice now no longer tenable. Bovine vaccine and glycerinized lymph are capable of producing the old typical clinical phenomena, caused by the use of humanized lymph, and we have a right to claim the following as representing our beliefs in the matter of vaccination and the part it plays as a prophylactic against smallpox.

It is hardly necessary to say that the whole value of vaccination depends upon its ability to protect either against infection with smallpox or to modify the virulence of an attack, should it occur. That such results have followed vaccination, the history of 100 years has proved. These two points in the experience of twenty years having been absolutely demonstrated in hundreds of outbreaks and thousands of cases, the question to

be determined is, upon what factors in vaccination do such satisfactory results depend Briefly, these are:—

1. A normal vaccine, that is, one where the assumed microbe of the disease is actively present.
2. The use of a vaccine when fresh and active.
3. The absence of extraneous microbes in the vaccine.
4. The careful inoculation of patients and subsequent treatment of the wound.

The question arises at once, what is a normal vaccine? In the experience of your committee, it is a lymph which produces a history of evolution of the vesicle exactly as set forth by Prof. T. D. Ackland, one of the officers of the English Royal Commission of 1889-1896 to enquire into alleged injuries due to abnormal vaccinations and which are found in Allbutts' System of Medicine, Vol. 2. Its stages are, (1) Scarification and immediate inflammatory reaction, subsiding within a few hours; (2) On third or fourth day, pale red papules appearing, which during the next five days, develop into compound vesicles, becoming pustules on the ninth day; (3) Vesicles distended with lymph and plump at first, and as the lymph thickens, the centre becomes depressed forming a scab and surrounded with a distinctly raised marbled border; (4) An area of redness and inflammatory thickening of tissue around the pustule of an inch or more in diameter; (5) A decrease from tenth day of the inflammatory area and a drying of the scab which falls by the twentieth day; (6) a cicatrix usually with a hard scar centre with rays and foveæ more or less distinct.

The same article gives a table showing variations in the development of the pock, most of which it states however, are slight, as abnormal rapidity or delay in the evolution of the vesicle. In the same work, is another monograph by Dr. M. Copeman, dealing more especially with the morphology, chemistry and preparation of vaccine. He there points out how bovine lymph has in England taken the place of humanized, and then proceeds to speak of glycerinized lymph. He speaks of the practically constant presence of extraneous microbes in lymph, and notes his experiments as early as 1891, which proved that a 50 per cent. solution in water of chemically pure glycerine to one part of vaccine pulp set aside from light for a few weeks removes all saprophytes as well as tubercle bacillus and streptococcus. Thereafter follows the satisfactory statement that in vaccine thus properly produced, "we have then a preparation which while even more efficient, as vaccine, than the original lymph can be produced entirely free from extraneous organisms," and he points out how scientific workers in France, Germany, England and America have borne out these statements. Referring to the operation on the calf, Copeeman points out that on the fourth day the pustule is mature, and that the lymph is then taken and treated, thereby showing that with glycerinized lymph the evolution of the vesicle is the same as with lymph non-glycerinized. It may be further remarked that in the experimental work of Chambon and Menard of the Animal Vaccine Institute, Paris, the history of normal vaccination is the same as that given above. The immunity of bovines and of children and of monkeys thus vaccinated, to revaccination, is not only relative, but for several years practically absolute. Of the protective qualities against exposure to smallpox, of vaccination in the persons of physicians and nurses, it is unnecessary to dilate, as we have personal knowledge of the fact in the case of hundreds during the past twenty years, as well as the protection up to the fourth day by immediate vaccination of exposed persons.

Copeman gives many illustrative examples of the same fact. That in a whole series of cases, with relatively inert vaccine such immunity does not exist against even mild smallpox has been brought to our knowledge in different outbreaks within the last few years, and further, that persons with no cicatrices from a previous vaccination within periods from a month to a year, have been revaccinated with perfect success. Ernest Hart speaking of the necessity for efficient vaccination, pointing out, in a study of recent statistics compared with those of former years, says, "that we are taught a variety of lessons of which the most important is that while infant vaccination affords an almost absolute immunity against smallpox up to ten years of age, to do so it must be efficient." Absolute immunity, he further states, is practically obtained with a re-vaccination after ten years. He points out, that the more closely the vaccination of patients in recent epidemics has been studied, the more obvious has it become that a deplorably large proportion of the nominally vaccinated have been most inefficiently vaccinated and are consequently almost

appreciated against smallpox, and says "So long as medical men in their mistaken good nature are found ready to yield to the ignorance or vanity of applicants for vaccination, and to make only one or perhaps two insignificant insertions of lymph in a child's arm and to certify cases of that kind as successfully vaccinated, so long shall we have to struggle against the fallacies and sophistries of anti-vaccinationists." Asking further how efficient vaccination is to be secured, he states, that the Local Government Board prescribes that public vaccination shall in all ordinary primary cases produce at least five good-sized separate vesicles not less than half an inch in diameter. The total area of vesiculation on the eighth day following the vaccination, should not be less than half a square inch.

In a statistical study by Dr. Thorne Thorne of 13,755 cases in the London Smallpox Hospital in two series, the following results for the second series from 1852-1867, or in 10,661 cases is given :—

	Per cent. of deaths.
Stated to have been vaccinated but with no cicatrix.....	39.4
With 1 cicatrix.....	13 8
" 2 "	7 7
" 3 "	3 0
" 4 "	0.9

He further points out that of 13,755 admitted, vaccination was very defective in 11,172 of whom 1,072 died. Of 1,079 reasonably good, 21 died—and of 1,505 with good normal marks, only 13 died. Such statistics can be duplicated from many sources.

In conclusion it may be stated that we have yet to learn of any facts which can alter the biological, clinical and statistical evidence upon which the Royal Commission of England after seven years of investigations, based its conclusions, which are essentially those set forth in the preceding references, and which in every detail, whether biological, clinical or statistical, are supported by our own experience.

The urgency of the situation demands that this Board makes public its views on a subject which the public have become ignorant or careless of, and that it impress its views in the most positive manner upon local health authorities in all parts of the Province.

All of which is respectfully submitted.

P. H. BRYCE.
J. J. CASSIDY.
W. H. OLDRIGHT.

IV.—REPORT OF AN OUTBREAK OF DIPHTHERIA AND SCARLATINA IN GEORGETOWN.

By P. H. Bryce, M, A., M. D., Secretary.

Toronto, June 27th, 1900.

Mr Chairman and Members of the Provincial Board of Health :

Gentlemen :—Owing to the request of the active Medical officer Dr. Rae, of Georgetown, and the Local Board of Health, that your Secretary visit Georgetown to advise with the Board as to the measures necessary to deal especially with diphtheria, which had appeared and rapidly spread to some seven families within a fortnight, I visited the town on the 27th of June, and met the Board and a number of town physicians.

The details of the outbreak were entered into, the results showing that the first fatal case was the driver of a delivery waggon, who, it was thought had been sick a day or two while at his work. The case was not at first reported as diphtheria, and not till the fatal result, was the Board in a position to deal with the case. Others rapidly followed ; but some of these it seemed probable must have been exposed at school to some mild case, not diagnosed at all. The continued persistence of scarlatina for several months was also discussed, and the old story of cases not reported by householders, some not being seen by a physician at all, was told ; with the still more common instance of physicians giving certificates long before the 40 days' period from the onset of the disease had arrived. Physicians pointed out how difficult it was to control the children even when houses were

placarded, and the common opinion was expressed that so long as no isolation building was available to which first cases with the nurse should be removed, so long was it to be expected the disease would continue to crop up.

Your Secretary urged this point most strongly, and on motion of the Reeve and Secretary it was decided that a building site be secured, and a small hospital erected thereon. A beautiful site in a grove of pines in the suburbs was visited and decided upon, and the Board was to meet again the same evening.

An interesting illustration of how the disease is spread has since occurred. The Reeve, an active member of the Local Board, has a cottage in Muskoka, and a week or two later went there with his family.

Within a few days of his leaving home, a young child developed the disease in Muskoka. The nature of the disease was not suspected, but fortunately Dr. Bensley of the Biological Department of the University, who was summering in the neighborhood was called in, at once became suspicious, took swabs, and having his microscope diagnosed the disease from slides, and promptly quarantined the whole camp; and the father and child were removed to a camp near Gravenhurst, where a local physician would attend, and so promptly was the whole matter carried out, and disinfection completed, that no second case occurred. It is not often the utility of the microscope in expert hands has been better illustrated.

With 50 or 100 of such expert microscopists spread over the counties of the Province, with power to see complete isolation following diagnosis rapidly executed, the disease would become about as rare as smallpox.

All of which is respectfully submitted.

Your obedient servant,
P. H. BRYCE,
Secretary.

V.—REPORT OF AN OUTBREAK OF DIPHTHERIA IN EASTERN MUSKOKA

By P. H. Bryce M. A. M. D. Secretary.

July 14th, 1900.

To the Chairman and Members of the Provincial Board of Health,

Gentlemen:—After hearing of outbreaks in two parts of this region, your Secretary proceeded on July 12th, to Huntsville. He learned that scarlatina had to some extent been present there during the early summer, and that on the day preceding a fatal result had occurred in one family, which had been quarantined in the house, and the attending physician had reported diphtheria to have been superposed on the scarlatina. Your Secretary with the Acting Medical Health Officer, visited the premises and found the child very ill, the attending physician asserted with diphtheria. Unfortunately while placarding had been done, with quarantine, the isolation from the sick was very imperfect, and the situation demanded removal of the family or the patient if further cases were not to occur. Here again the absence of any house for isolation purposes was a difficulty, and your Secretary urged the removal of the family to a tent on the outskirts of the town. The Board promised to at once take action in the matter, and at latest reports no further deaths had taken place. The constant unpreparedness of Local Boards for dealing with outbreaks in the only efficient manner is more and more forced upon the attention of this Board, and the necessity for some more exact routine methods in our municipalities is increasingly apparent.

On the succeeding day your Secretary proceeded from Bracebridge by livery, and after obtaining the services of the Secretary of the Local Board, proceeded into Watt and Stephenson Townships, where was a series of six families in which a number of cases had appeared and two deaths had occurred. It was with unusual pleasure that your Secretary found how prompt and thorough had been the measure adopted for limiting the disease in one of the newer districts. Each family had been quarantined, with inspectors appointed to keep them in and supply them with all necessaries. When possible separate build-

ings were being utilized for the sick and suspects. The full time limit of four weeks was being carried out for isolation of the sick, and no second set of cases had been reported.

The origin of the disease was most interesting and instructive. At the saw-mills on Skeleton Lake a number of river-drivers had collected who had been engaged in driving from Skeleton Lake. It appears that from some unknown source contagion had been brought to a house in Caldwell Township to the north of the lake from which one of the lumberman came and from which three families had been infected, one death occurring. This man, going back and forth to his house, apparently became infected, altthough never sickening, or else carried infection in his clothing. He was in the habit of petting a child at the mill-house, who took the disease. When this outbreak occurred the men dispersed to their homes, carrying the disease to their families in four or five other houses This remarkable result not only illustrates the relative immunity of strong grown persons, but strikingly illustrates the fact that infection to vulnerable children seems readily borne in the breath of immune persons, or those so slightly sick as not to be suspected of bearing the disease. No further cases have been reported, precautions being urged with regard to maintaining a full period of quarantine and to disinfecting, under the supervision of the assiduous and efficient medical officer, all exposed places. The importance and value of such work will be appreciated, when it is understood that both Watt and Caldwell Townships border on the lakes where tourists congregate in thousands, and with whom the suspicion of danger causes a migration, a matter of a few hours. The absence of any outbreaks of contagious disease in the Muskoka Health Resort area, continues to be a source of extreme gratification to this Board, which has reason to think that the systematic guarding of the lakes from pollution has been a chief instrument in this immunity, while the activity of the Local Board well illustrates how much can be done when the financial aspect presents itself as strongly as it does to those. whose summer business depends for its success so largely upon maintaining a reputation for freedom from contagious disease.

During the visit of your Secretary to Bracebridge he likewise conferred with the Mayor and Council on the proposed survey of the town, ordered by the Council with a view to instituting a general sewerage system. Remembering that the Muskoka River flows to the Muskoka Lakes, the town has fully impressed upon it that any sewerage system will require to be so constructed that proper sewerage filtration may be carried on ; and the energetic Town Council seems fully resolved to proceed along the most modern lines for its accomplishment.

Your Secretary further inspected the sewage disposal works advised by him last year, which have been carried out, at Beaumaris, Windermere, Rosseau, Maplehurst, Port Sandfield, Port Carling and Port Cockburn ; in most instances with a thoroughness which is most admirable, and which makes the summer hotels of the district models of what may be done, if they have pointed out to them the methods, and are as anxious as their proprietors have been, to maintain unpolluted water-supplies. The smaller hotels have also improved their methods with regard to the disposal of kitchen refuse and the careful management of dry earth closets.

All of which is respectfully submitted,

(Signed) P. H. BRYCE,
Secretary of the Board.

CIRCULAR TO PHYSICIANS AND LOCAL BOARDS OF HEALTH ON THE PREVENTION OF TUBERCULOSIS.

TORONTO, June 15th, 1900.

To Physicians and Members of Local Boards of Health :

GENTLEMEN,—The Provincial Board of Health at its last regular meeting instructed the Committee on Epidemics to issue a circular containing, among other instructions, a copy, as follows, of the resolutions dealing with the problem of limiting the spread of tuberculosis, and especially of that more prevalent and contagious form of it popularly known as consumption :—

Moved by Dr. Cassidy, Seconded by Dr. Bryce,

1st. That as Tuberculosis is a contagious and infectious disease, all inmates of Provincial Institutions who are affected with this disease should be isolated in wards set apart for such patients, and not be permitted to associate generally with other inmates.

2nd. That when rooms or wards, which have been occupied by consumptive patients, become vacant, they should be disinfected according to the methods set forth by the Provincial Board of Health in the pamphlet issued by it containing rules for checking the spread of contagious disease.

3rd. That an individual, affected with tuberculosis and living in a private family, should be isolated as much as possible from other members of the household, especial care being taken in the destruction of his expectorations.

4th. That when the room occupied by such patient becomes vacant, it should be thoroughly disinfected, and, as a matter of prevention, the whole dwelling should be disinfected according to the instructions in the pamphlet regarding disinfection issued by the Provincial Board of Health, and that such other precautions be taken as are provided in Section 101 of the Public Health Act (1897).

5th. That the Local Boards of Health be urged to establish rules for the notification of cases of tuberculosis to the Medical Health Officer or to the Secretary of the Local Board of the municipality.

It is apparent from the above resolutions that Local Boards of Health, by putting into force the recommendations contained therein, are expected to place themselves in the position to know not only the number of cases of consumptives in the municipality over which they have jurisdiction, but also to supply them, through the physicians whose duty it is to make notification of the occurrence of such cases, with short printed rules explanatory of the routine measures which should be adopted for the benefit of a consumptive patient, and, which is in one sense still more important for the safety of the members of the household in which he may be domiciled. The rules referred to should obviously include directions for :—

1. Receiving all expectorated matter and nasal discharges upon handkerchiefs of paper or upon cloths, which can and should be immediately destroyed.

2. The frequent disinfection of all body linen, of all bed clothing and of all woven fabrics exposed to infection through the patient.

3. The dispensing, as far as possible, with the employment of curtains in the room or rooms occupied by the patient, and substituting linoleum or hardwood floors for carpets.

4. The wiping of floors, wainscotting and walls with cloths dampened in some disinfectant solution, and the doing away with the dangerous practice of stirring up dust by sweeping.

5. The keeping of patients, as much as possible, in rooms specially arranged for them, which should, when at all possible, face the south in order to get the benefit of sunlight and its germicidal effects.

6. The providing of ventilation such as will at all times permit the patient to breathe pure air.

7. A thorough disinfection from time to time of any room or rooms used by the sick, and also the thorough disinfection, under the supervision of the Local Board of Health of any vacated house previously occupied by a consumptive patient before it be again occupied.

Such notification must in no case be understood to mean that Local Boards of Health are to make public the existence of the cases reported, or that houses are to be placarded or the patients isolated ; but to enable them to assist householders to take steps to limit the danger of infection, and to have houses, once occupied by consumptives, thoroughly disinfected before other families are permitted to occupy them.

In view of the very great prevalence of the disease, of its chronic character, of the generally unsuccessful results of home treatment, and of the danger of the infection reaching others, the Legislature has passed the following Act to encourage and assist municipalities in giving effective aid to persons affected with tuberculosis.

The objects of the Act and the methods by which its provisions are to be made operative are set forth therein so plainly that further explanations are unnecessary. As the Public Health Act, Sections 43 to 46, already contains provisions for the organization of County or District Boards of Health and the appointment of County Health Officers,

it will be plain that this Act similarly provides for co-operation on the part of Municipal Councils and Local Boards of Health in dealing with a disease not dealt with readily by smaller individual municipalities. This co-operation can only be brought about by members of Local Boards of Health, physicians and the charitably disposed uniting to urge action in the direction indicated in the Act relating to Sanatoria, recently passed by the Legislature.

(Signed) J. J. CASSIDY,
P. H. BRYCE,
WM. OLDRIGHT,

Members of Standing Committee on Epidemics, Provincial Board of Health.

AN ACT RESPECTING MUNICIPAL SANATORIA FOR CONSUMPTIVES.

(*Being Cap. 57 Ont. Stat. 1900.*)

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows :—

Establishment of sanatoria by municipalities

1. Subject to the provisions of this Act, any municipality, or any two or more municipalities in this Province may establish a sanatorium for the treatment of consumptives, and may for that purpose acquire lands and interests therein and erect and equip buildings and other improvements thereon, and do such other things from time to time as may be necessary to complete, maintain and operate such sanatorium and carry out the objects and requirements of this Act.

Joint action by two or more municipalities.

2. Any municipality may procure or join another or others in procuring plans of proposed buildings and improvements for a sanatorium and estimate of the cost and such other information upon the subject (including a proposed site) as may seem desirable, and any two or more municipalities may confer together, by such representatives as their councils may appoint, with a view to agreeing upon a basis for establishing a joint sanatorium, and they may enter into a provisional agreement respecting the same.

Approval of plans, site, etc., by Provincial Secretary.

3. If one municipality only is establishing the sanatorium, a provisional by-law respecting the same shall be passed, and the plans, estimates, and the said provisional by-law, or said provisional agreement, as the case may be, and the proposed site (which may be anywhere within the Province) shall be submitted to the Provincial Secretary, who shall submit the same to the Provincial Board of Health for report. Upon receiving the report of the Board of Health, the Provincial Secretary may approve of the plans, estimates, provisional by-law or agreement, as the case may be, and the site ; subject, however, to such modifications and alterations as he may think best.

Provided, that if a proposed site be not within the municipality or one of the municipalities proposing to establish the sanatorium, the Provincial Secretary shall, before approving of such site, transmit by post to the head of the municipality in which the proposed site is situate, notice of the application for approval for such remarks thereon as such municipality may desire to submit.

By-laws for raising necessary funds.

4. Upon the approval of the Provincial Secretary of the plans, estimates, etc., the council of the municipality, or of each of the municipalities concerned, as the case may be, may from time to time pass by-laws to raise the moneys proposed to be paid or contributed by such municipality in respect of the original cost of the sanatorium, or of the cost of extensions, alterations and additions, and to issue debentures therefor. The provisions of *The Municipal Act* respecting by-laws creating debts and voting thereon by electors, and all other provisions of the said Act applicable thereto, shall app

By-laws for establishment of sanatoria.

5 Upon the said by-law or by-laws being passed as in the preceding section is provided for, the municipality or municipalities concerned may pass by-laws to establish the sanatorium, or to enter into the agreement to establish a joint sanatorium, as the case may be, in accordance with the approval given by the Provincial Secretary above provided for; and, upon by-laws being passed to raise the moneys proposed to be paid or contributed in respect of the cost of extensions, alterations and additions, the approval by the Provincial Secretary of the plans thereof shall be obtained in the same way as provided for with respect to approval of the original plans, and upon such approval being given, the extensions, additions and alterations may be proceeded with by the municipality or municipalities concerned.

Board trustees.

6. The by-law or agreement establishing a sanatorium or a joint sanatorium, as the case may be, shall provide for the appointment of a board of not less than five trustees to take charge of and manage the same. The qualifications, term of office, which shall not exceed five years, and quorum of the trustees, and the manner of appointing their successors or of filling vacancies, shall be declared in the said by-law or agreement, and the trustees appointed from time to time shall hold office until their successors are appointed. The agreement for a joint sanatorium shall state the proportion of the yearly cost of maintenance, operations and repairs to be borne by each municipality. The said by-law or agreement may also define the terms and conditions on which patients may be admitted into the sanatorium, and contain such other particulars as may be thought best.

Trustees powers and duties.

7. The trustees and their successors shall be a corporation under the name of "The Trustees of (here name the sanatorium)," and they shall be free from all personal responsibility for acts done within the scope of their authority as such trustees. They shall have such powers and duties as are conferred by this Act, and such other powers and duties not inconsistent with this Act as may be conferred upon them by the said by-law or agreement as the case may be, or by any future by-law or agreemsnt passed or entered into with the approval of the Provincial Secretary.

Chairman and vice-chairman

8 The trustees shall elect yearly one of their number to be chairman of the board, to hold office for one year and thereafter until his successor as chairman is elected. A vice-chairman may also be similarly elected.

Property vested in trustees.

9 The lands and personal property acquired from time to time for the sanatorium shall be conveyed to and vested in the trustees for the uses and purposes thereof, and if proceedings for the expropriation of the site of a joint sanatorium become necessary such proceedings shall be taken on behalf of the municipalities concerned in the name of the trustees, and for the purpose of such expropriation and the proceedings thereon and connected therewith the provisions of *The Municipal Act* shall apply, and the trustees shall have with respect thereto all the rights and powers of the council of a city or town, and the proceedings shall be the same, as far as applicable, as if they were taken by the council of a city or town.

Property, etc. to be under control of trustees.

10. The trustees shall, subject to the terms of the by-laws or agreements relating thereto, and to regulations made by the Lieutenant-Governor in Council as hereinafter provided for, have the control and management of the erection of the buildings and improvements and of the operations and maintenance of the sanatorium and of all matters and things connected therewith or relating thereto, and may from time to time make rules and regulations respecting the same not inconsistent with the terms of the said by-laws or agreements or of this Act, or of regulations made, or to be made, by the Lieutenant-Governor in Council hereunder.

11. The Lieutenant-Governor in Council may from time to time make regulations respecting the inspection and management of the sanatorium, and such regulations shall take effect and be complied with, notwithstanding the terms of any regulations made by the trustees, which, so far as inconsistent

with those made by the Lieutenant-Governor in Council, shall be and become inoperative.

Grant from province towards establishment

12 The Lieutenant-Governor in Council may grant to the trustees of any sanatorium one fifth of the cost of the site, buildings, improvements and equipment, extensions, additions and alterations, provided such grant shall not exceed with respect to any one sanatorium the sum of $4,000 in all. All sums granted hereunder are to be paid out of the consolidated revenue of this Province.

Aid to maintenance from Province.

13 The Lieutenant-Governor in Council may, out of any moneys voted by the Legislature for the purpose, pay to the trustees of any sanatorium, towards the maintenance and support thereof, a sum at the rate of $1.50 per week for each patient therein from time to time, and the treasurer of the municipality (not having established, or not being a party to the agreement establishing the sanitorium) in which a patient was domiciled at the time of admission, and who has been admitted with the approval of the council of such municipality, shall, out of the moneys of the municipality, pay to the trustees a sum at the rate of $1.50 per week for each patient.

Annual rates.

14 The municipality or municipalities establishing a sanatorium or joint sanatorium, as the case may be, shall, with the yearly rates and in the proportions provided for in the agreement, levy such moneys as may be required to meet the balance of the cost of maintenance, operations and repairs of the sanatorium for the year, and shall from time to time pay over the same to the trustees. Provided always that nothing herein contained shall authorize the trustees to incur any liability or expenditure not authorized by the terms of the by-law or agreement establishing the sanatorium or by by-law or resolution of the municipalities concerned.

Proviso.

Proviso.

15. Nothing in this Act contained shall prevent the municipality or municipalities establishing a sanatorium from closing the same at any time or times, either temporarily or permanently.

Proviso.

16. If a sanatorium be closed for a period of nine consecutive months the Legislature may make provision for the sale or other disposition of the sanatorium and the properties and effects thereof and for the application of the proceeds, and may make such other provisions relating thereto as to it may seem just.

Exemption from taxation.

17. The real and personal properties acquired for a sanatorium and vested in the trustees shall, so long as the same are so vested, be exempt from all municipal or other taxation.

Accepting donations.

18. The trustees may accept from any person or corporation donations of property, real or personal, whether by will or otherwise, for the uses of the sanatorium, and may apply the same in accordance with the terms of the donations.

VI. REPORT ON THE APPEARANCE OF ANTHRAX ON THE FLATS AT WHITBY.

By P. H. Bryce, M.A., M.D., Secretary.

August 14, 1900.

Mr. Chairman and Members of the Provincial Board of Health:

Gentlemen:—Some two weeks ago complaint came from Whitby that some cattle had suddenly died while pasturing in a field below the outlet of several sewers into the bed of a creek of some size during spring freshets, but which is dry during summer. Of these cattle three were found dead in the field, one recovered, and one died 24 hours after being seen. They were the property of Mr. Sleep, and the deaths took place early in July.

About a fortnight ago one died in a neighboring field next below on the same creek, and another about July 5th, these being the property of Atler Brant.

It was naturally thought at first that the cattle had died of poison, as for many past years the flats had been used for pasturage without bad results.

As, however, the tannery now in operation had been opened only a year or two, and leads into a sewer discharging into the creek, and as it was only last year the Ladies' College authorities had extended to the creek an overflow tile from their cess-pool, it was thought that the sewage, which stood in pools in the field near the sewer outlets, might be the cause of the sudden deaths.

Suspecting, however, from the sudden character of the deaths, that anthrax was the cause, I requested the local authorities to send fragments of liver and spleen from the last animal dead. This was done, the body, however, having been buried a week or more. Cultivation showed the presence of putrefaction bacteria, but nothing definite as to anthrax. When, however, the last two died on the Brant farm, specimens of the whole liver and spleen were sent promptly. Experiment has proved the suspicion as both in the blood itself, in cultures of it, and in guinea-pig experiments, and the blood from inoculated animals, the typical bacilli of anthrax have been found.

On August the 10th I visited Whitby, and in company with the Mayor, Health Officer, Members of Council, Board of Health and parties interested, visited the infected area, the tannery, etc.

Naturally, suspicion was directed to the refuse from the tannery, but as it is a green-hide tannery, *i.e.*, only handles Canadian fresh hides, while all are treated by the lime process, a careful inspection of the tannery and the methods adopted, make it extremely difficult to connect the tannery with the outbreak. Of course there is no apparent or possible connection between anthrax and the sewage from the college.

In view, however, of the disposal of sewage both from the college drain and the town sewer being illegal, as carried out, your Secretary indicated to the President of the College his duty under the circumstances, as well as a means whereby, with septic tank and sub-surface drainage, he can dispose of the sewage of 200 persons without polluting any stream.

The Manager of the tannery, which is the chief polluting agency on the town drain, had also pointed out to him that polluting the stream with animal refuse from a tannery, was clearly an infringement of the Statute, and he promised to adopt such settling tanks and filters as would be adequate for the removal by filtration of pollution.

The Mayor and town authorities have actively taken up the matter of preventing further pollution from either cause, and while the source of the anthrax infection will probably remain a mystery, the fencing off of the course of the stream and the flats, and cultivating grain in them for several years before grazing is allowed again, seems an obvious necessity.

I would respectfully recommend the adoption of the report.

Your obedient servant,

(Signed.) P. H. BRYCE,
Secretary.

VII.—REPORT ON THE OUTBREAK OF TYPHOID IN WALLACETOWN.

By P. H. Bryce, M. A., M. D., Secretary.

Toronto, Oct. 15th, 1900.

To the Chairman and Members of the Provincial Board of Health :

Gentlemen :—In consequence of reports of the presence of typhoid fever in Wallacetown in Elgin County, your Secretary visited the old village situated on the Talbot Road, and found that a series of cases had followed the use of water from certain wells. Similar outbreaks had occurred in past years.

It was found on investigation that the wells of the village are shallow, from 8 to 14 feet ; that the lots are small and that in every case there were sources of pollution close to the several wells implicated. The upper soil being sandy, made soakage from polluted

sources easy, while, as has been observed frequently by your Secretary, the temperature of shallow wells in the later summer months gives an opportunity for the development of the typhoid germ.

The analysis of the water from several wells indicates the presence of animal contamination.

Your Secretary after examining the premises where the several cases had occurred, suggested .—

1st. That the use of water from the several wells be strictly prevented.

2nd. That during the warm season the people be advised to boil the drinking water.

3rd. That new sites be selected for wells, situated at safe distances from local sources of pollution.

4th. That driven wells be put down, whereby pollution by way of the top becomes impossible, and by which the ground water in the well is prevented from rising in temperature beyond the normal 49° to 50° F.

The latter recommendation has been made from experience obtained in several parts of the country, notably the Thamesville district where the subterranean water similarly lies near the surface, but where for years a perforated pipe has been used, driven with a point covered with a fine brass gauze to prevent the ingress of sand.

An interesting fact was learned, that in the neighboring new village of Dutton, on the railway, some three miles to the north of Wallacetown, typhoid did not prevail, there being a more or less impervious soil on top of the water-bearing stratum. This difference in districts in the prevalence of typhoid according to the arrangement of permeable and impermeable soils, has been noticed in different parts of the country for years, and associated with the question of the depth of the ground water supplies many interesting points in connection with the biology of the typhoid germ.

The report is submitted to your Board for consideration, with the recommendation that it be adopted.

Your obedient servant,
(Signed) P. H. BRYCE,
Secretary.

VII.—REPORT ON THE SANITARY CONDITION OF AMHERSTBURG SEWERS.

By P. H. Bryce, M. A., M. D., Secretary.

Toronto, Aug. 12th, 1900.

Mr. Chairman and Members of the Provincial Board of Health:

Gentlemen :—Your Secretary begs to report upon the results of an examination of several complaints made last year and in 1900, regarding the sanitary conditions of Amhersburg, dependent chiefly on the absence of any regular sewerage system, and the consequent presence in a section of the town of private sewers, discharging either into the river above the intake of the waterworks, or into open ditches or old board drains.

It is unnecessary to enter into full details as to the streets on which I found such conditions prevailing.

Having met the Mayor and Members of the Board of Health and Council, an inspection of various sections of the town was made. To understand the situation readily, it may be stated that the town is situated along the river below a bend of the shore, which causes the current to flow close to the Canadian side between it and Bois Blanc Island. The water pipe which is carried some 200 ft. from shore into the channel is in a satisfactory place, but it is inevitable that a certain amount of pollution from local drains above will take place, and that a certain permanent pollution is inevitable, especially owing to the fact that a fleet of steamers calculated at one in every five minutes, passes up and down the river, and in the hot weather thousands of excursionists are brought down daily to the park on Bois Blanc. It is estimated that during the day 10,000 to 15,000 persons are on vessels between Detroit and Amherstburg. The tonnage being greater than on any other river in the world, it is apparent that the summer pollution of the stream will

annually increase ; and that as has been shown by increasing outbreaks of typhoid fever during the past two years, some measures for permanently protecting the water supply must be adopted. The matter was thoroughly discussed at a meeting with the authorities, and your Secretary pointed out that under section 30 of the Public Health Act, the Board was empowered to direct an improvement in the means for securing a good water supply.

The first thing to do was to construct a local sewer in the street parallel to the river, and above the water works, which would receive the sewage from all the lateral streets of that section. This, indeed, the Local Board of Health has already by resolution requested the Council to construct, and the Council were about to take action under a resolution adopted to construct a sewer on sanitary grounds as a local improvement.

The second point demanded by the situation, is the installation of two of the smaller mechanical filters, such as are so successful in St. Thomas and Chatham, by which not only the clay of the river in flood will be removed, but the much more important thing, the bacterial impurities, the apparent cause of enteric and diarrhoeal diseases prevented.

3rd. The necessity for the removal of old private box drains in other streets, and the construction of new tile sewers with proper connections, and the inspection of house connections in other streets where sewers were built for cellar drainage, but now used for water closets and sinks, was also urged as a prime necessity to prevent entrance of sewer gas through cellar drains or old box drains.

4th. The adoption of a plumbing By-law, under which all house plumbing and drainage would be carried out under inspection.

5th. The general extension of sewers on the more thickly settled streets, on some of which owing to the retentive nature of the level soil, the house cellars are continuously damp, and in wet weather often flooded with water.

Apart from the immediate well-being of the citizens, such broad methods of dealing with the sanitary problem are especially desirable and necessary, since the peculiarly fine situation of the old historic town at the mouth of the river, where the banks are relatively high, and the neighbouring splendid park of Bois Blanc, place Amherstburg in the position of becoming one of the most desirable summer resorts on the Detroit River. At this point the river rapidly widens into the lake, and the westerly breezes blowing over a large area of Lake Erie, supply both a freshness and coolness not equalled until the St. Clair widens into Lake Huron.

Your Secretary likewise spent some of this time with the School trustee Board and went fully into the question of the adoption of a modern system of ventilation and heating of the Central Public School, which if adopted, will make it one of the best heated and ventilated buildings in the Province.

The report is presented for the consideration of the Board, with a recommendation that it be adopted.

Your obedient servant,
(Signed) P. H. BRYCE,
Secretary.

IX.—REPORT ON THE DRAINAGE OF THE VILLAGE OF COBDEN.

By P. H. Bryce, M.A., M.D., Secretary.

Toronto, Oct. 15th, 1900.

Mr. Chairman and Members of the Provincial Board of Health :

Gentlemen :—Owing to requests repeated at different times, your Secretary, while at Ottawa, visited Cobden, a small town some 20 miles north of Renfrew, and met the Local Board and several members of the Council regarding the drainage of the town

The village is not incorporated and is situated in the township of Ross, and a difference of opinion has existed as to the duty of the Municipal Council to supply proper drainage for the village, which lies in somewhat of a basin on a heavy clay. The C. P. Railway passing through the village holds back the water from the west part of the village and floods cellars and makes roads impassable in spring time.

There proved on investigation, however, to be a natural drainage area southeasterly toward a lake at the east of the village which only requires to be utilized for a main sewer in order to relieve the village of many difficulties now experienced.

The powers of the Municipal Act for making local improvements on a local assessment basis were pointed out, and your Secretary indicated the several possible methods of procedure under the Act.

1st. It was urged that the Township Council by resolution engage an engineer to make a survey plan and report on what is necessary for drainage in the several sections of the town.

2nd. That then by petition or by a resolution of the Local Board of Health that certain sewers be constructed as sanitary necessities, it would be possible to have the main sewer built, and such laterals as are immediately demanded by the situation on the local improvement plan.

The village is a large shipping centre for cattle and grain for a large area of fertile country, and there seems every reason to believe that with a waterworks supply cheaply constructed, and local drainage instituted, the village would attract, from its favorable business situation, an increased population.

It is recommended that a copy of this report be forwarded to the Municipal Council, urging that action be taken along the lines indicated.

All of which is respectfully submitted.

(Signed.) P. H. BRYCE,
Secretary.

X.—REPORT ON DEFECTIVE SEWERAGE AT BARRIE.

By P. H. Bryce, M.A., M.D., Secretary.

August 12th, 1900.

Mr. Chairman and Members of the Provincial Board of Health:

Gentlemen:—On complaint through a firm of Solicitors under section 72 of the Act, I visited Barrie on July 31st, and in company with a representative of the Local Board and the several complainants, went over the area complained of.

On examination it appeared that two causes of complaint existed.

1st. The existence of a small sewer constructed along the side of a block in the main street leading to an outlet through a wooden sewer, and serving for the house sewage of several hotels and other large buildings. In addition, however, a gutter grating has been put in near the head, presumably to supply a means for street drainage, and possibly too a means for flushing the sewer.

To this sewer there were further carried under the Queen's Hotel two sewers connected with manholes or gulleys in the yard behind to collect and carry off the large amount of storm drainage collecting in the hotel yard, owing to the fact that towards it ran the drainage from the steep street and hill to the north of it, and the water from the roofs of a large stable and a number of stores.

The second cause of complaint was, that from a lane to the north of the hotel where the storm water was in fact allowed to run down to the hotel yards, it having no other way of escape.

The complaint arose from the flooding of the cellars of several buildings on front street, first during the spring freshet; the rush from the street to the east of the hotel apparently being together with wash from the yards too great for the capacity of the sewer, or that some obstruction existed as from gravel and debris carried into the sewer.

As an opening made in the wooden drain toward the outlet had failed to relieve the soakage into the Queen's Hotel cellar, the presence of an obstruction below this point seemed beyond question.

Recommendations.—The following recommendations were made:—

1st. Make an opening below the street grating to the sewer, and endeavor by a head of water to force the obstruction, and if not successful, to open at another point somewhat further down, and so on until the obstruction was found and removed.

2nd. To close up the street grating to prevent the ingress of storm water, as the capacity of the sewer is not great enough; and was not intended to carry gravel and other debris brought down during the flood from the hillside.

3rd. To build from the lane which carries water to the hotel yards, a paved gutter of such grade and area as will carry the water to a tile drain at the east end of the lane, thence to the gutter of the street to the east.

4th. Cause all the roof water from the several buildings to be discharged in proper eave pipes and carriers therefrom, to the street gutters or sewers on their respective streets

The whole matter as affecting the health of householders, is one which comes directly under the duties of the Local Board of Health, and I would recommend that a copy of this report be forwarded to the same with instructions under section 29, cap. 248, to take such steps, if not already carried out, as will remedy the nuisance existing.

I have the honor to be,
Your obedient servant,

(Signed) P. H. BRYCE,
Secretary.

XI.—REPORT ON SANITARY INSPECTION OF AURORA.

By P. H. Bryce, M.A., M.D., Secretary.

August, 1st, 1900.

Mr. Chairman and Members of the Provincial Board of Health:

Gentlemen,—Having been requested by the Local Board of Health of Aurora to visit the town and advise with them as to a series of insanitary conditions arising from the absence of a sewerage system. I visited the town and in company with the Mayor and members of the Local Board of Health, spent some hours in inspecting and advising as to methods for abating nuisances. The chief evils exist in the two water courses flowing together below the town, and into which drainage from private houses, a cheese factory, hotels, and a tannery, all flow. The character of the nuisance at different points will be understood, and your Secretary advised in most instances, individual or collective action for disposing of the sewage by the septic tank method combined with sub-surface tile filtration.

The general availability of this method is becoming yearly more manifest, and in several instances now it has been made available for the wastes from cheese factories. Perhaps the most difficult case to deal with is that of tanneries where the washings from the several vats containing hair, fleshings and lime, continue to make a heavy material which obstructs ordinary filter materials. The methods which have been advised as most likely to meet this, are that of the septic tank for receiving all wastes, and from which the overflow is carried to an artificially prepared filter bed of gravel and sand, and still better an upper layer of coke. By this method it becomes possible to regularly remove from the surface of the bed the deposit, which soon clogs the filter, while the presence of lime undoubtedly tends to delay microbic activity. In the green-hide tanneries the work can, however, be carried out without serious expense if given regular attention. The systematic carting of deposits from lime vats and fleshings to be ploughed under as manure, serve to remove from tanneries an unenviable reputation as creating serious effluvium nuisances.

An equally serious difficulty exists at Aurora, where the waters of a small creek are utilized as a public supply, in fact for domestic use. No attempt has hitherto been made to protect the stream above from pollution by cattle and poultry, and on it within a mile of the source one serious evil in the shape of a shallow pond thus polluted, exists. Your Secretary advised the Board as to its powers to prevent such nuisances being committed on the source of water supply, under section 70 of the Statute; but in view of the exis-

tence of a splendid series of streams in another valley, flowing near to the town, it was suggested that the more satisfactory method will be to secure the ground around the head springs, and by a series of tiles with open joints to lead the water to a pumping well at a convenient point near the town, and allow the surplus water to be utilized for ponding, with a view, owing to the character of the valley, of making an artificial lake.

The progressive character of Aurora, with its several industries makes it especially desirable that this beautiful town on the Oak Ridges, should by such modern improvements add still more to its attractions.

Your Secretary respectfully recommends the adoption of this report.

(Signed) P. H. BRYCE,
Secretary.

XII.—REPORT ON EXTENSION OF PORT HOPE WATERWORKS AND SEWERS.

By P. H. Bryce, M. A., M. D., Secretary.

August 13th, 1900.

Mr. Chairman and Gentlemen of the Provincial Board of Health:

Gentlemen:—Your Secretary at the request of the Local Board of Health and Water Commissioners, visited Port Hope on Aug. 11th, and in company with the authorities inspected the routes of several proposed new sewers, leading to Smith's creek, which is at present the sewage outlet, it being a rapid stream.

Difficulties arising from discharging on or through private property were discussed, and the proposed points of discharge in deep water considered. Other old wooden drains sources of local nuisance were examined, and action advised for replacing them by new sewers. The steep gradients create a question of some difficulty in construction, which demand better advice than the merely local plan hitherto adopted, there being no town engineer. There has not hitherto been any regular inspection of house plumbing or connections, owing to the fact that the most of the sewers put in have been permitted by the Council, but not paid for by them or constructed as local improvements.

The By-law at present attached to the Public Health Act should guide, or such modification of it as the Council and Board may determine, and it remains for this Board to decide whether it should approve of the further continuation of sewers in Port Hope by methods which have hitherto existed.

Regarding the plan herewith submitted for sewerage on North street there is little to say except that it is proposed to have it constructed by private parties as in other instances; but the interests of public health would seem to demand that it be approved of subject to the proviso that it be constructed under the supervision of the Local Board of Health as provided for in Schedule "B" of the Act, now in force in Port Hope.

The question of enlarging the filter basins in the gravel bank was examined. This source which this Board insisted should be adopted rather than a pipe into the lake, has proved remarkably successful, and the town is desirous of still extending its usefulness by another basin, and by constructing a much larger stand pipe. It is proposed to construct one of 200,000 gallon capacity, and as the water supply will be from the same source as hitherto, it gives your Secretary much pleasure to recommend this report approving of the extension of the waterworks and of the sewerage system, with the proviso that it be done under the supervision provided for in Schedule "B" of the Public Health Act.

Provided further, that if at any time the sewers built as separate or private sewers prove unsatisfactory, that the Provincial Board may exercise its authority to have the whole system remodelled to meet the sanitary needs of the town.

All of which is respectfully submitted.

Your obedient servant,
(Signed) P. H. BRYCE,
Secretary.

XIII.—REPORT ON DELHI CANNERY.

By. P. H. Bryce, M.A., M.D., Secretary.

Toronto, Oct. 5th, 1900.

Dr. R. B. Wells, Medical Health Officer, Delhi, Ont.

Dear Sir,—In consequence of the several communications forwarded to the Provincial Board of Health regarding an alleged unsanitory condition in connection with the refuse from the factory of the Delhi Canning Co. I was instructed to visit the premises and did so in company with your representative, Dr. Revell, on September 28th. In company with the manager, Mr. Stroat, we examined the factory, and were much pleased with the splendid appliances for carrying on the business in all its branches. To know that such a factory could be kept going with raw products from May to October was an agreeable surprise, and suggested an energy on the part of the Company which is unusual in this class of industry. With such an output as was apparent from the large storehouses for the manufactured goods, it was apparent that the refuse from the various fruits and vegetables must be large, and that the disposition of such during the long hot season must prove a matter of some consequence both to the Company and the public. When fresh it is good food, but when decomposed it is poor food, and gives rise to fermentation products which may create a serious nuisance.

It is apparent then that some systematic method of dealing with the refuse when fresh must be adopted.

The method adopted this year of having the refuse carried out and spread over the hill-side to be eaten or trampled upon and into the soil does not economize the food, and is sure to create a nuisance, quite apart from the effluvium nuisance caused by the presence of a large number of pigs, if fed in proximity to residences The extent of the area where the pigs are fed is so familiar to your Local Board that I need not refer to it, or to the many tons of corn cobs which are lying along side the large stables.

As the nuisance is one which will recur annually, if such conditions as have existed in the past are continued, I would suggest that the Local Board of Health instruct the Company as follows :—

1st. To secure a piece of sandy soil several hundred yards from the nearest residence, to which all decomposable refuse not eaten by the animals in the stables will be taken when fresh.

2nd. If there fed to hogs, the ground where the refuse is thrown should be turned over every few days, and the feeding done on a fresh piece of land. Thus, nuisance is prevented, and the uneaten refuse becomes a fertilizer.

3rd. All refuse not fed should be regularly hauled away and ploughed under as manure before it decomposes.

With regard to the premises at present I have to request the Local Board to direct the removal of the pigs from their present feeding ground, and to have the decomposing refuse removed or covered within such time as appears to the Board reasonable.

As the feeding of pigs as an industry is a business to which section 72 of the Public Health Act is applicable, the Board should in each succeeding year give a permit for carrying it on, under conditions which will prevent the creation of a nuisance.

I have the honor to be,
Your obedient servant,
Secretary.

XIV.—REPORT ON KNACKERY IN NEPEAN TOWNSHIP.

By P. H. Bryce, M.A., M.D., Secretary.

October 15th, 1900.

To the Chairman and Members of the Provincial Board of Health :

Gentlemen,—In consequence of a complaint from the Medical Health Officer of Ottawa, that a Knackery situated near the Ottawa River in the neighboring municipality of Hintonburg, was likely to prove a danger to the water supply of the city, your Secretary took advantage of his visit to Ottawa to investigate the cause of complaint.

The Knackery of————was found situated on low ground several hundred yards from the river bank, and to have the drainage from it directed towards a swamp grown up with willows and grass, in which the drainage gradually soaks away; the open drain and swamp near the building creating, however, an effluvium nuisance, increased by the organic refuse and skins spread out on a platform to dry after the fat had been rendered, and the flesh had been removed.

Within a short distance of the Knackery was located a slaughter house, with no observed conveniences for drainage by which an effluvium nuisance might be prevented.

Residents of houses situated within several hundred feet complain of the effluvium nuisance caused by these two places, and urge that steps be taken to abate the nuisances complained of.

As has been observed in all this class of effluvium nuisances, the causes of effluvia are three:..

1st. Putrefying uncovered meat and carcasses.

2nd. The effluvium from rendering vats and tanks, whence odors are carried off when the tanks are uncovered, and the vapors are not consumed by passing through the fire.

3rd. The decomposition of the floor washings carried away in open drains.

The first and third causes equally apply to slaughter houses crudely constructed.

Recommendations.—In view of the facts, your Secretary would recommend that the Local Board of Hintonburg be instructed,

1st. To enforce the provisions of section 72 of the Public Health Act with regard to the licensing and regulating this class of industry.

2nd. That a license be granted only on condition that (*a*) floors be laid of cement or tongue-and-grooved materials, which can be regularly washed.

3rd. That a tight room be provided in cellar or elsewhere where carcasses will be kept at a low temperature to delay decomposition.

4th. That all rendering vats be covered, and that from them a pipe for carrying the steam and effluvia be led to the ash pit of the furnace.

5th. That skins and other refuse be dried in a room where the odors can be carried to the furnace.

6th. That a proper covered tile drain be constructed to lead the sewage to a tank with two compartments, from the latter of which the water can from time to time be discharged into a number of sub-surface tiles or passed over a sand filter before the effluent is allowed to pass into any stream.

There would seem to be no good reason why, if such conditions are insisted upon, such industries should not be carried on at once with profit, and without creating any insanitary condition.

All of which is respectfully submitted.

(Signed) P. H. BRYCE,
Secretary.

THE SWEATING SYSTEM.*

By. P. H. Bryce, M.A., M.D.

Madam, President, Ladies and Gentlemen,—In accepting the invitation of your Committee to address a few words on the subject assigned to me, I have felt that, while the importance of the subject cannot be over-estimated, my opportunities for obtaining by personal investigation the facts necessary for speaking in an authoritative manner have been both occasional and very imperfect.

Coming, however, frequently into contact with the people while investigating some outbreak of disease, and having had the advantage of perusing various special reports on the wage-earning powers and social conditions of the laboring people, I am in a position to refer to at least some of the difficult problems entering into this important social question.

The ever increasing complexity of society in our rapidly developing country is bringing into existence conditions which have been the despair of legislators who during the past century of reform have endeavored to cope with the evils which through centuries have grown up in the crowded cities of the countries of Europe, and which are forcing upon the attention of philanthropists and statesmen, alike in the United States and Canada, the rapid spread of those evils attaching to the growth of urban population which in the early days of settlement did not exist. The growth in Ontario of urban population between 1881 and 1891 was from 25 to 30 per cent. of the whole population and the census just taken will find this percentage still further augmented.

Our time does not permit of an enquiry into the causes, moral, social, industrial and economic, producing these results; but suffice it to say that they are found to be producing the same results as in already crowded countries, as in England, where the census of the present year has shown the urban population to be more than 75 per cent. and in the United States more than 40 per cent. of the total population. Commercial expansion has made the increase of industrial employment possible, but the supply of workers, whether of immigrants from older lands or from the rural districts of our own land, added to the natural increase of urban population, has ever been in excess, unless temporarily, of the work to be done. That, however, industrial competition is due rather to the insufficiency of methods or machinery for distributing labor than to the excess of work-people might be illustrated indefinitely, and in addition to this is that never-solved problem of how to get the free individual to be directed into productive channels, where competition does not greatly exist, namely, to the land where, for honest industry, comfort and health are always possible, and for most a competency. Especially does the difficulty exist in connection with the women of our communities, who are, so to speak, fixed to the soil. They cannot migrate to farms, unless as wives, while the kinds of employment for them are naturally limited, by our social ideas, to lighter work, such as that found in household duties, stores and factories. But these occupations vary, even in their attractiveness and possibilities, and while a woman, mistress of her own house, will be satisfied with household duties, we find an increasing dislike to the so-called menial duties of a household servant, just as we have seen a dislike for farm life, and we find young women of every class, cultivated and otherwise, competing either for work in offices, schools and stores, or in the workrooms and factories, and even in larger numbers for the chance to obtain unmanufactured goods to be taken to their homes to be made into garments.

When the facilities of transportation and trade between even distant countries are further considered, and how the labor market is sensitive to any change where a commercial crisis or a war, even across oceans, occurs, it is apparent that the problem of how competition in prices of goods must immediately affect supply and demand, and therefore wages, is not one which can be solved by any hard and fast commercial rules, or by any legislation, however wisely made or honestly administered.

I have been but summarizing some facts and conditions which are well-known to all, though perhaps we are not all accustomed to view them from the standpoint of their relationships to one another; but it is apparent that no great good is likely to come out of say attempts to combat the evils attaching to the "sweating system," or indeed any other social or economic evil without an appreciation of the principal causes underlying the

*Read May 16, before National Council Women's Association, London.

same. In England as far back as 1795 official enquiry was made into the Factory System; but not until the great period of agitation which begot the Reform Bill of 1832, did English statesmen seriously touch the questions of child labor or the sanitary condition of factory or other operatives. The findings of these Commissions are matters of history and England has been the mother of social reforms along both these lines. America has followed, and Canada has had several Commissions of enquiry, and Reports have been printed pointing out in 1896 and again in 1899, the existence of conditions similar, except in extent as regards the evils associated with certain lines of industry as in England and the United States.

Legislation too has followed; and there now exist on the Dominion Statute Book, laws regulating the conditions of labor in the matter of supplies of clothing made under government contracts, and in Quebec and Ontario Factory Acts regarding hours of labor, the employment of children, and the condition of shops. Indeed, at the present moment, the Factory Inspectors of Ontario are having regulations prepared for registering all employers, and the addresses and names of persons who receive materials for manufacture, with a view to the inspection of premises, and improving the surroundings of persons employed. But while this is something gained, it is apparent that, as laws against gambling do not prevent it, if people are determined to gamble, so factory acts will not stop sweat shop evils to any great extent, if the conditions which produce them exist. The poor woman who takes work from a manufacturer home, to labour at with her daughter's and other help for 16 hours a day, to make wages from $1 50 to $4.00 a week, would gladly live in a larger house with neat, sanitary surroundings, but how can she afford it? She would not willingly hide scarlatina and sent infected clothing back to the manufacturer for distribution; but she knows that if she reports disease, she will be deprived of a livelihood,—and she must live! The law can and indeed must step in to prevent a greater evil by creating a less; but it does not, probably cannot, create laws for preventing the competition which creates low wages. Only last week I noticed the assignment of an old established firm of clothing manufacturers in one of our large cities, from which it would appear that all do not make money at the expense of the work-people; and it is apparent that the over production which makes competition unprofitable and business failures to occur, will inevitably make the competition amongst work people greater and force down still further the rate of wages. We see everywhere the most unprecedented activity in combinations of capital, with the accompanying gambling in stocks, and find women and even clergyman engaged in it; yet we would fain hope that sowing the wind would not again reap the whirlwind. We see aggregations of capital engaged in great commercial enterprises and industries, as for instance ready-made clothing or millinery; but do we not all endeavour to get our goods as cheaply as possible? What, therefore, appears to be the difficulty underlying this problem of problems? I think all must agree that primarily it is a moral one. It is not supposable that Divine Goodness has not made His own earth adequate for the needs and happiness of all; and hence it seems logically true that, until His creatures learn to know that they are to exercise not the brute instincts, but the moral attributes contained in the Commandment "Thou shalt love thy neighbor as thyself", no possible solution of this problem can be found. We urge the necessity for more stringent laws; but the law-makers will not and cannot be expected to go further than the mandates of the people whom they represent. Do we not see corporations influencing governments and parliaments, and yet it is the people who have the power to elect legislators, who will obey their commands? Hence it is apparent that it is the moral status of the people as a whole which will determine just what our legislation shall be and how it will be administered. How then are we to bring about an amelioration of conditions which we deplore, or the removal of evils which are manifest to all?

We see organizations of Trades and Labour exerting their influence; but what direction is given to it? Take the cities where their influence is paramount, and we ask has it been exerted in putting men of high principle and intelligence into our city Council? What are the qualifications sought for in the men they elect to our Legislatures? The answer too often must be that the "slim" candidate, to use a new-found term, the man of many promises, is the man elected rather than the man of high moral ideals. One repeats again that it is in the moral field that we must look for a solution of this as other social problems; and it is in a large degree to the women of the country we must look for the exercise of those patient, yet unseen influences, which like the breath of spring are to

cause to germinate, blossom, and develop into fruit those seeds of goodness which the All-Father has implanted in mankind.

If, then, it is to this Association as representing the enlightened sentiment of the women of Canada that we are to look for those influences which are to bring about an amelioration of the conditions so inimical to the national health, whether social, moral or physical, we have to briefly enquire : how its energies and those of other noble women in our country are to be directed ?

We have to reply in several ways, viz. : (1) By personal example ; (2) By giving certain definite directions to education , (3) By influencing legislation ; (4) And by individual and combined efforts to investigate existing evils, and through agitation, whether social, or religious, to create a public sentiment which will at once suggest reforms and guide to their practical realization.

1. The influence of example : It would be presumptuous in me to even suggest to the ladies of this Association anything on this point ; but, perhaps, I may venture by illustration to make my meaning plain. As has been set forth freely to-night by my friend, Dr. Sheard, there exist in every hamlet, town and city in Canada cases of consumption, a disease whose essential character is marked by an innutrition, in fact an inherited tendency, the outcome of such conditions as those we are discussing, and oftener due to the very industrial and sanitary conditions making the environment of those who are its victims. It will be apparent that if the ladies of our communities, realizing this could by systematic missionary work in the homes where such cases exist aid in extending a knowledge of how houses, though small, might be made more clean and sanitary, how cooking of cheap though nutritious foods properly, would make them appetizing and digestible, and how fresh air and sunlight can become the possession in large degree of all, they would probably have done more in lessening the prevalence of this disease than we are likely to do even by health laws and sanatoria. Were it possible to cause our highest social and ethical ideals to be imitated by those less fortunate in opportunities and education, can there be any doubt but that a healthier tone, both physical and moral, would prevail thoughout society ?

2. The influence of education : What I have said about example might equally well have come under the word "education." Froebel has set forth that education is the establishing of a harmony between the "ego," or internal self, and the external self, or its environment ; or that the object of man's life is to become a unit, physical, mental and moral. If this is our ideal, then it is plain that much that forms a part of present educational methods, makes such manifestly difficult and indeed impossible. How shall the child of crowded tenements and narrow streets ever be brought into touch with the world of nature,— God's world ? Froebel initiated the kindergarten, which, if his ideas could be carried out, would do much to fulfil an ideal of education. But all will agree that to attempt within the four brick walls of a school, with bad air, poor light, almost no playground and no garden to create a harmony between the internal and external self is little short of an absurdity. Pale faces, injured eye-sight, crooked spines, and learning from printed pages of isolated facts apart from their relationship is not education. Surely it were better to halve the school-day, give the child an external life, if possible, where eyes may see nature, or a cultivated fragment of it, with some little room to train his limbs, to educate his hands in practising, as a pastime, some of the many simple technical arts of sewing, or knitting, or cooking, and of planing, sawing or gardening, which later on become irksome because associated with the deadening effects of labor for the sake of money. If the child could get to love a thing, how many difficulties in house keeping, as "the servant problem," would be lessened, when the mistress could, as in the simplicity of Arcadian times, handle the distaff and sing the songs of her country with her maidens ; and how many labor strikes and socialistic disturbances would die of inanition if the master could meet his workmen on the ground of a common humanity, and show that all had common interests, that "God hath made of one kindred all nations under Heaven," and that on earth it is even possible that we may begin to enter into the Kingdom of God ?

3. By influencing legislation : It is apparent that were such ideals as those suggested in any degree realized, the legislation which would be their natural outcome must follow as a logical consequence. It is an old proverb, "Let me make the songs of a people and I care not who makes their laws," and in it we see the evident truth, that outward acts are but the expression of the sentiments and thoughts of heart and mind. Were

Eden or Paradise regained laws for men would be unnecessary ; for their love would be law and law, love.

"And worthy seemed, for in their looks Divine
The image of their glorious Maker shone,
Truth, wisdom, sanctitude severe and pure,
Severe but in true filial freedom placed ;
Whence true authority in men :"

And so, were the women of Canada inspired only with such a law, factory acts, restriction of child labor and labour unions would be as useless and unnecessary as were rules of honour for the Knights of King Arthur's fabled Table Round, or labour laws for the Land of the Lotus-eaters.

4. But inasmuch as we have to deal with the world as we find it, and as we know from sad experience that life is not only not all "beer and skittles," but that it is for the toiling millions often a sad world, it becomes our duty to take up the burden, where we find it, and as philosopher Carlyle has it "Do the duty which lies nearest you" by

Invetigating existing evils done only by individual efforts and then through organization create a public sentiment which will result in social reforms and improvements in our laws. Without reflecting upon the great good done through the National Council of Women, it does appear to me, that most effective work would result from the formation of a number of its members into select committees, to do certain definite work arranged for from year to year, so that at the annual meeting's correct conclusions based on broad data would form the basis of action in pressing for certain manifestly necessary and urgent reforms. Let me illustrate. I learned a day or two ago from that remarkably active and intelligent lady, Miss Carlyle, our single female Provincial factory inspector, that in one of our cities, one firm of clothing manufacturers has some 35 depots, or contractor's work shops, where clothing is sent for manufacture, and that probably 1000 more persons mostly women, receive work direct from the factory to be made up in their homes.

Now probably not less than 500 families are engaged in working for this single firm. It ought not to be a difficult thing for this Association to select from its members and their friends, good and wise persons in our different labour centres, to start out with printed forms, and through discreet and kind enquiry prepare for future use statistics of such value that a report based thereon would wield such an influence for good upon the public, manufacturers and legislators that if reforms were found necessary the reasons therefor would be so cogent and unanswerable that they would instantly follow. That we know nothing accurately regarding the condition of this last class of workers may be learned from the fact that only this year has Ontario legislation required a register to be kept by all clothing manufacturers, of the persons and their residences, where material is received for manufacture in order that proper inspection of these can be made. How imperfect at the best this inspection will be may be seen from the figures given for all from probably 2000 houses apart from the workshops of contractors. Something has indeed been done, to point out the direction in which to work ; but if real good is to come of it, the visits to houses where work is done, should be rather in the spirit of helping, than of arraigning those whose necessities often make their surroundings insanitary. That such visitations are however demanded in the interests both of the workers and the public can be abundantly illustrated. We have already referred to the prevalence of consumption ; and we unfortunately know how prevalent it is amongst those engaged over-hours, in sedentary work and in crowded premises. Of 636 houses in one tenement district of New York, there was an average of $\frac{3}{4}$ of 1 case to each house ; and amongst these doubtless were many sweat shops or work rooms similar to many a poor home among us where the mother will be found working to maintain the consumptive daughter or the daughter labouring to provide for a dying father. But the evil has only begun at this point. As the struggle becomes keener others of the family are infected and less able to resist infection.

From a country village a complaint came to me within the last fortnight, that a baker who has been ill for months with consumption was making bread and sending it out from the premises where he lived ; and later I was informed that he is giving up and leaving the work to wife and daughter who will be his nurses. If such conditions exist in a country village, what must be the end where in hundreds of families in our cities work is taken home, and clothing to be subsequently handled and worn is worked upon in some cases by the sick or kept in infected houses for days ? But, this is but one disease

and we know how readily other diseases as scarlatina, diphtheria and small pox will disseminate through clothing. That the dangers are not imaginary may be illustrated by a single personal experience. Some months ago I was telephoned by a suburban physician to come and see a supposed case of small pox. It proved to be a true case, a boarder in a house where a number of others also resided. As we entered the house we went into the front room and found two women dress-making, who naturally were much alarmed at the possibility of small-pox. Passing farther we found the sick man, a barber, lying on a lounge in the kitchen, where the mistress was engaged in baking, and had just removed pies from the oven. One day later and the manufactured goods would probably have been sent home, to be worn by some innocent, and unsuspecting victim of conditions, not foreseen and for which no person was responsible. The patient was a barber who had shaved an undiagnosed case, who about the same time infected the tailor who had made a coat for him.

We have at present smallpox existing in the Province, and one has only to suppose a mild case existing undiagnosed or hidden in a private work-shop to understand, how at any moment many cases may spread from a single house, during the six weeks of the disease. That the danger may be averted was proved in Montreal in 1885, where as a condition of admitting goods into Ontario, every clothing and other manufacturing firm, had to satisfy the Provincial medical inspector that all their people were vaccinated and came from healthy houses, and that every bale of goods was made on the premises, and that each was fumigated before being shipped. Except in probably one case, not a single case of smallpox was imported through goods into Ontario. I need not illustrate further either the need of inspection of places where ready-made clothing is manufactured, or the possibility of good resulting from its being carried out. As a routine measure I have suggested to both manufacturers and factory inspectors that every article on being returned to the factory shall be passed through a simple steam disinfection, inexpensive both as to time and method, just as during the past two months, provincial inspectors have disinfected in a steam chamber every article of baggage of 5,000 men from the lumber camps, at our station at Sudbury before allowing it to be taken to their homes.

But while we are thus protecting the public we must go further and protect the workers. All factory inspectors and all reports of commissions agree that the work of manufacture in order to prevent the evils of sweating, as of over-work and of dangers due to infection, should be carried on in the factory. It is quite true that even then, persons from infected houses may carry infection; but the danger is greatly lessened, while our experience shows that the manufacturer being brought into more direct contact with the persons he employs is more likely to deal with them in a fair way, than when he knows nothing of them. Besides this it is possible to have in large factories better heating, lighting, ventilation and sanitary arrangements, than in most family dwellings, and such are more readily inspected and made more amenable to regulations It is my conviction based upon many years' experience, that the evils, which we so greatly deplore are rather due to lack of appreciation by manufacturers of the possibility of removing existing evils, than of any brutal or selfish indifference to the welfare of their operatives Business operations are so wide in extent and character, so many departments demand immediate and prompt attention, that employers and their managers have about exhausted their energies when they have calculated the cost of buying and selling and of paying their debts, not interfering, and properly so, with the domestic independence of their employees. When, however, other and better methods are brought to their attention, sometimes by inspectors, sometimes by public opinion forcing certain facts upon their attention, I have noticed a general willingness on their part to co-operate if it can be shown that the reforms are practical. The matter has recently come up in connection with the sanitation of lumber camps, and I have been much pleased at the readiness with which prominent owners and managers of lumber companies are prepared to introduce improvements, as better ventilation, laundries, and a hospital building or tent for the welfare of men in the camps and at the mills.

General denunciations are useless, and productive of no good results, because often undeserved, and when deserved it is not the kind of reproof that is acceptable. What is demanded especially in all matters of sanitary reform, social and moral reform is that the better way be pointed out, and the means of its accomplishment indicated; and I know of no way by which this can be done so rapidly and efficiently as by the personal work and co-

operation of the ladies of our communities, aided by all other good citizens. I have noticed during my experience of twenty years, that in proportion as the public are relieved of th e personal responsibility for any class of work, say, sanitary matters, or the care of their own sick or unfortunates, the more do they demand of officials, as if they have the legal and moral right to unload upon the authorities all personal responsibility. We see this similarly in the education of our children, whether at day school or sunday-school—the teacher and preacher are too frequently looked upon as the grocer and butcher, who are paid for relieving parents and housekeepers, from the disagreeable necessity of seeing that their children are educated and directed in the path heavenward.

In conclusion, I have only to say that our task, as that of all human uplifting, is and must be a slow process, based upon ceaseless endeavors. Were it otherwise it would be wholly out of keeping with the world-processes, which we have observed seem to be but a fulfilling of the purposes of the Creator in His own Universe. In proportion as we rise in the scale of being, which means a physical, mental and moral process, shall we maintain ourselves and help others to that place, where the words of the Great Master will greet us :—"For as much as you have done it to one of these my brethern you have done it unto me."

THE TREATMENT OF TUBERCULOSIS IN SANATORIA.*

P. H. Bryce, M.D., Secretary Provincial Board of Health.

Mr. Chairman, and Gentlemen of the London Medical Society :

It was with unusual pleasure that I received your kind invitation to read a paper before the Society on a subject which is assuming so important a position in our ideas relative to the treatment of that most prevalent and fatal disease, tuberculosis. It is quite true that tuberculosis presents very different clinical appearances at the several periods of life ; yet, as will appear in the mortality returns which are presented in the following table of deaths in Middlesex during the past five years, we may for practical purposes say that treatment in sanatoria of tuberculosis will be of that pulmonary form commonly known a consumption. Thus only fifty-eight deaths, including those under one year, are recorded for the first ten years of age out of the 673 deaths which were registered ; or we may say that over one hundred deaths occur annually in Middlesex from pulmonary tuberculosis.

Deaths from Consumption, County of Middlesex, by Ages and Sex

(*For five years, 1895 to 1899, inclusive.*)

Years.		Under 10	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 and over	Age not given.	Totals
1895	Males	1	6	25	13	9	9	5	3	.....	71
	Females	2	12	20	11	8	10	3	.....	.....	66
	Totals	3	18	45	24	17	19	8	3	.....	137
1896	Males	4	5	13	9	4	4	6	.....	1	46
	Females	4	11	25	17	11	8	2	1	.....	79
	Totals	8	16	38	26	15	12	8	1	1	125
1897	Males	5	7	9	10	10	5	6	1	.....	53
	Females	7	10	23	14	12	5	3	1	.....	75
	Totals	12	17	32	24	22	10	9	2	.....	128
1898	Males	6	5	12	10	9	10	5	2	...	59
	Females	13	12	24	7	8	5	5	2	.....	76
	Totals	19	17	36	17	17	15	10	4	.....	135
1899	Males	11	6	15	18	8	7	8	5	.....	78
	Females	5	7	20	16	6	8	2	6	...	70
	Totals	16	13	35	34	14	15	10	11	...	148
Grand Total	Males	27	29	74	60	40	35	30	11	1	307
	Females	31	52	112	65	45	36	15	10	.....	366
	Grand Total	58	81	186	125	85	71	45	21	1	673

But while this is true as regards actual deaths, it is not equally true as regards the proportion of different forms of the disease actually prevalent during the various periods of life. As expressed in a previous paper :

"The interest which the study of this disease has for us as medical men becomes increasingly great when we recognize how numerous are its varied manifestations, how insidious its beginnings, and yet, though so often slow in its evolution, so fatally persistent in its progress. From birth to old age this disease is present, often obscuring as mists of the morning our vision in the diagnosis of the diseases of infancy, again seeming for the

*Read before Middlesex Medical Society, London.

few short years of childhood to be dissipated as the clouds at noonday, only to return once more with adolescence as a dark storm-cloud, too often bringing rapid ruin and destruction with it; or if such be delayed, then only to leave constitutions as shattered ships, gradually but surely breaking up until they finally disappear in the deeper gloom. So generally spread, indeed, are the germs of this disease that the physician must ever be prepared to see them taking advantage of the invasion of every acute disease, as when in typhoid, pneumonia or pleurisy they make the attack at some vulnerable point when the vital resistance of the patient is at its lowest point."

Realizing the truth contained in this paragraph, it is apparent that there must always be a large number of cases of incipient tuberculosis which will not be recognized as such until some more acute manifestation of the disease places the patient in the hands of some physician. That even then many cases are not diagnosed is quite within the experience of all. It must, therefore, appear evident that the problem of the treatment of tuberculosis, from the standpoint of a cure, whether in a sanatorium or elsewhere, depends primarily, other things being equal, upon the stage at which the patient comes under medical observation. I have collected data from various sources of information which will be useful in our consideration of this very essential point.

Stage of the Disease at Time of Diagnosis and Treatment.

In the laboratory of the Provincial Board of Health, specimens of sputum are examined from all parts of the Province, with information supplied on postcards. Of 138 specimens, Dr. J. J. Mackenzie gave the following results:

Duration of Symptoms (Reported).		Positive.	Negative.
One month and under	18	16 6 per cent.	83.4 per cent.
One to two months	26	34.6 "	43.4 "
Two to three months	14	50 "	50 "
Three to six months	27	55.5 "	43.5 "
Six to twelve months	28	46.4 "	53.6 "
One to two years	8	62.5 "	47.5 "
Over two years	15	26.6 "	73.4 "

The results of the second laboratory period, ending October, 31st, 1900, are included in the following:

Of the 591 specimens sent to the Provincial Health Laboratory in ten months ending October 31st, 1900, 218 gave positive results, and 373 gave negative. Of 389, with data supplied, 149 gave positive results, and 240 negative results. Of 149 positive results, 69 were males and 80 were females.

Number of patients giving positive results, by ages:

Years:	16-20	21-30	31-40	41-50	51-60	61-70	Total.
Male	11	24	15	13	6	0	69
Female	12	32	20	9	6	1	80
Totals	23	56	35	22	12	1	149

Table showing number of positive cases, arranged according to duration of symptoms when specimens were submitted:

	1 month and under.	1-2 mo's.	2-3 mo's.	3-6 mo's.	6-12 mo's.	1-2 yrs.	2 years and more.	No data.	Total.
Male	5	4	10	11	16	8	8	7	69
Female	2	3	11	19	25	7	10	3	80
Total	7	7	21	30	41	13	18	10	149

Roughly, the disease had existed in these over two years; on an average, for fifteen months. It may be said that until very recently the larger proportion of cases of consumption were not diagnosed until the physical signs were well advanced. Dr. S. G. Bonney, Professor of Medicine in the University of Denver, has recently written regarding 546 selected cases in private practice, and states that "388, or 71 per cent., arrive in Colorado with distinct evidence of tubercular infection in each lung," also that "the total

average period of delay from the time of definite onset of the disease was a little over eighteen months." Dr. S. Edwin Solly, of Colorado Springs, says that of one hundred successive cases

In 48 cases treated as soon as diagnosed	24	were in	1st stage
	14	"	2nd "
	14	"	3rd "
In 52 cases not treated for several months or even years after onset	14	"	1st "
	17	"	2nd "
	21	"	3rd "

Statistics still more valuable for practical purposes and more comparable to the results of the laboratory returns already referred to, are those of the Hanseatic Insurance Co., carried on under the Workmen's Compulsory Insurance Laws in Germany, where, of 1,541 cases treated between 1893 and 1897, 30.9 per cent. were slightly affected; while of the Bremen Insurance Co. in 1896, 279 patients were treated at the Reichburg Sanatorium, of whom 23 9 per cent. were slightly affected, 32.7 per cent. were moderately affected, and 43.6 were seriously affected. The Gravenhurst (Ont.) authorities have stated that not more than 1 in 8 cases, examined for admission, are in the first stage of the disease. But, further, Dr. Trudeau, of the Saranac Lake Sanatorium, in his last article published this year, states that about 33 per cent. of the 1,200 cases treated within the last three years were in the incipient stage. Thus, taking the more exact German statistics and those of Drs. Solly and Trudeau, where patients were treated as soon as diagnosed, we may say that, with our present knowledge and the actual practice of the public in the matter of seeking medical advice, not more than 25 per cent. of patients are brought under treatment for pulmonary consumption until the disease is well advanced.

It is quite clear, therefore, that, in considering the sanatorium treatment of consumption, we must keep two distinct objects in view, viz: (*a*) the cure of the disease, and (*b*) the prolongation of the life of the patient, and the removal of infectious cases from surroundings where they are a menace to the health of others.

If we assume that each of the 100 deaths occurring in Middlesex in any year represents the 75 per cent. of patients who were in the more advanced stages of the disease, and that, as we learn from the statistics of sanatoria, a large proportion of patients at this stage do not die during the year while at the sanatorium, as at Saranac Lake, it is probably within the mark to say that at least 200 patients are present in the county in an advanced stage of the disease during any year; and, hence, at the present time any sanatorium treatment will be directed chiefly to patients in advanced stages of the disease. This will be yet more apparent when we remember the distribution of cases in different sections of the community. Thus, in the returns for the city of Toronto during five years, I have found that at least 80 per cent. of the deaths occurred in the artisan and laboring class, and that of 1,555 deaths over 15 years of age, 1,211 died during the years when, if married, they would be rearing families; while 75 per cent. of the deaths of females were within the child-bearing period.

I have dwelt on these figures at some length, since they have a most important bearing upon the subject under consideration. It is, I think, quite evident that sanatoria must be considered as falling under two classes, viz., private sanatoria for the well-to-do, and sanatoria established under the provision of some statute similar to that passed by the Legislature for establishing municipal sanatoria in Ontario. While the principles of treatment of the phthisical in each case must be the same, there will, nevertheless, be differences in detail worthy of consideration. I shall, therefore, devote my remarks especially to the municipal sanatoria which we are seeking to establish, with the view both of curing the sick and prolonging their capacity for work, and of protecting their families against infection.

Management of Patients in Sanatoria.

Anyone who has any knowledge of patients in public institutions knows that the success of the institution depends primarily on the person in charge of the everyday work, *i. e.*, on the superintendent; and, second, upon the rules which he is called upon to carry out. In the management of a sanatorium I shall take it for granted, as being beyond

question, that the superintendent should be a physician. It might be said: Well, if a sanatorium is nothing more than a large boarding-house, where the patients are to live in a clean, well-kept home, and given good food, and such exercise as they feel inclined to take, of what use is a physician? This idea has prevailed, and in some countries still prevails with regard to insane asylums and other similar institutions; but in all progressive institutions we now find the insane are being looked upon as patients, to be studied and treated with a view to cure in the same manner as any other patients. Such is the idea which has led to the success of the modern sanatorium treatment in the case of the consumptive. Hitherto he had been looked upon as incurable, and the most to be done was to make his life as comfortable as possible. Now, while we cannot hope to cure all the insane, and certainly do not expect to see all consumptives recover, yet the very success of our efforts in this as in all other work will depend upon the conviction which the superintendent has of the curability of the disease.

In the establishment of a municipal sanatorium, two things must be kept in view—that patients in the primary stage of the disease must be expected and provided for, and that patients who are in the advanced stage of the disease must be admitted in yet larger number, for a time certainly in the proportion of one to two. It may be mentioned in passing that two of the best known sanatoria on this continent, Saranac Lake and Gravenhurst, insist that only patients in the primary stage be admitted, or only such others with a history which presents the hope of cure or at least of great amelioration. Hence, at neither is there provided practically any separate hospital provision, since patients are strongly advised, if doing badly or incurable, to go home. In a municipal sanatorium, on the other hand, our object is not only to cure patients but to protect households; hence for this class of patients a very definite amount of hospital provision must be supplied from the first. The erection of a cottage hospital, therefore, becomes necessary, not only for this reason, but also in the interest of patients who are not advanced in the disease, in which the neurotic element forms so important a factor. Hopefulness and despondency must constantly be dealt with as symptoms where it will try all the resources of the expert physician to maintain hope dominant rather than despair. Thus the evil effects of lack of supervision are well illustrated at the boarding-houses and winter resort hotels in the South.

1. Hence, the first rule which must be strictly enforced in a sanatorium is, that patients be not allowed to discuss their own or other cases with persons other than the superintendent or other proper officials. This is the starting point of that benevolent medical tyranny which patients must submit to in a sanatorium.

2. The second rule is but a corollary of the first, viz: That systematic means must be employed to in every way provide mental employment of a wholesome character, and hence we come to a third rule.

3. The careful division of each patient's time by a time-card which he or she keeps regularly as a diary, and which the physician weekly or oftener examines at the time of his medical examination, and continues or modifies the daily routine laid down previously in accordance with the experience obtained from results. I have had some knowledge of private sanatoria in different parts of this continent, and am convinced that in no one feature is there such room for improvement in the routine methods as in the close oversight of the daily life of each patient.

4. Assuming that the patient has arrived at the sanatorium, it is apparent that a complete family and personal history should be taken, as well as a detailed history of the case as regards its duration, signs, symptoms, extent of infection, progress of the disease, and a detailed examination of all organs and secretions. As the patient is new to his surroundings, it is natural that a close daily observation of him for a short time should be necessary in order that the best line of treatment in his particular case may be accurately mapped out, being modified only as subsequent observations may dictate.

5. As many are aware, the sanatorium treatment of consumption dates back to at least sixty years, but the work of Dr. Hermann Brehmer, at Gorbersdorf, begun in 1859, is the first whose history has been continuous to the present time. Following him as a pupil and co-operator, Dr. Dettweiler, of the Falkenstein Sanatorium, has added much to the knowledge already obtained at Gorbersdorf, of the treatment which we now call "The Open Air Treatment of Consumption." It will of course be understood that the sanatoria are constructed with all the advantages theoretically supposed to aid in the fresh air

treatment, such as perfect house ventilation, rooms exposed to direct sunlight, verandahs and solaria in proper and convenient positions, shelters in the grounds which may be turned away from the winds, walks through the grounds with graduated inclines, amusement rooms, and so on.

6. Actual treatment, as a rule, begins with the patient being placed in bed on his arrival and kept there, should the afternoon temperature rise to 100° F. or over; while the beds are daily wheeled to some large window or protected open balcony. Symptomatic treatment of the pyrexia is practised by some; but as a rule it is not advisable or necessary, as reliance must be placed on the improvement of the nutrition, and the quieting influence of fresh air on the thermic nerve centres.

7. When the fever has for several days been practically reduced, the rest cure proper begins, in the patient being allowed to recline on an adjustable reclining chair on a balcony protected by glass shelters in the direction of the wind. This treatment at many sanatoria is continued from 9 a.m. to 9 p.m., the patient then going to his bedroom, where even in winter, the window is left open, a screen only keeping off the wind.

8. While it is apparent that the condition of the patient must determine how long this treatment is to continue, both theory and more recent practice point to the time when with improved nutrition and increased strength gentle exercise may with advantage be added to the treatment. This is first attempted, unless in cases with recent hemorrhages, by breathing exercises, which are not more than the simplest movements which are taught our school children, increasingly to the more complicated ones of our manual of military drill. As progress is made, walks for graduated distances, and at different inclines, are permitted, and finally games and recreation, as bowls, tennis, boating and cycling are indulged in in moderation, while at the municipal sanatoria it is found that a notable improvement in patients has taken place where light gardening, household work, basket-making, and similar light industries have been introduced. Both from the evidence in many cases where ranching or outdoor life in the mountains has been taken up by consumptives, as well as from our every-day experience of the effects of exercise on nutrition and reconstruction of tissues, there can be no doubt but that under wise supervision both from the physical and mental standpoint, such employments play an important part in promoting cures. Indeed, Dr. Hans Weicker, of the Krankenheim, at Gorbersdorf, where a large number of work-people have been treated during the past five years, states that this class of patients improve decidedly more rapidly than the better classes, especially since some employment had been provided.

9. As adjuncts to treatment, some sanatoria have baths in which a more or less elaborate system of hydrotherapy is carried out according to the views of the medical superintendent. There is, perhaps, no sanatorium in which the benevolent tyranny is more exercised than at Dr. Otto Walther's sanatorium at Nordrach in the Black Forest. Walther trains his patients to stand even draughts, and makes the cold douche a means of giving resistance and tone to the peripheral circulation. Personally, I am convinced that the hot and cold bath play an important part if intelligently administered through improving the general tone and skin circulation; since it is common observation that the elimination of waste-products by the Turkish bath may safely go on without danger of a subsequent cold.

10 The question of the food of consumptives has been greatly discussed, and, as all are aware, much has been said which seems contrary to our observations and experience in the general question of assimilation and nutrition. At present, I believe it may be said that most physicians to sanatoria are agreed that a generous and nutritious diet, food well cooked, palatable and easily digested, is productive of the best results. We are all aware of the great change which has taken place in the feeding of typhoid patients. It used to be a standing order to give two quarts or more of milk daily, regardless of whether a diseased intestinal tract could assimilate a pint or not, ending, naturally, in discomfort, and the constant production of toxins. The same must necessarily be the case in the ill-regulated feeding of the phthisical. In nothing, however, will the personal and professional qualities of the physician be more tried than in this matter. The patients have already in most cases been suffering from dyspeptic troubles, especially of that persistent form, the intestinal, so closely associated with the neurotic type. Anorexia must be overcome by gentle persuasion, assisted more largely by the fresh air than all other agencies

and perhaps passive exercise and massage; while the use of lavage and the best intestinal disinfectants will prove of notable advantage.

11. The use of fats and oils, amongst which I would place first cod-liver oil, has been the subject of much discussion as regards their utility in the treatment of this wasting disease. We are all aware of the various theories regarding the emulsifying of fats through the action of the secretions, especially that of the pancreas, and may fairly assume that the amount of this, as of other secretions, is affected during an anæmia, such as that commonly present in phthisis. Recent experiments seem, however, to make it clear that fats are absorbed in a soluble form as fatty acids, and that the biliary and pancreatic secretions simply increase the solubility of the fatty acids. However that may be, there is in my experience a very notable distinction to be made in the readiness with which the two forms of carbonaceous foods, the starches and fats, are assimilated by many persons, especially persons with a weak intestinal digestion. In the case of starches it is common knowledge that the patient of the neurotic type must use certain starches, as that of the potato, very sparingly if intestinal fermentation is not to result, and the constant use of white bread can, I believe, in such patients be often restricted, with much advantage. On the other hand, it is common observation that persons of sedentary habits are increasingly refusing to eat fatty foods, as fat meats, butter being the only form of fat seemingly palatable. Now it has been a matter of personal observation that oils used, as olive oil in southern climates, in large amounts, and the best purified cod-liver oils can be used with the best effects in many patients to whom, owing to their not being a common article of diet with us, they may seem at first nauseating. Their utility, in my opinion, depends upon three distinct causes: (1st) They serve, owing to their oily nature and to their being broken up in the intestine into fatty acids and glycerine, as laxatives and lubricants of the intestinal walls; (2nd.) They are but slightly acted upon by bacteria, although in the absence of bile and pancreatic juice they may be decomposed into fatty acids and be largely discharged unabsorbed. And (3rd), when they are absorbed by the columnar epithelium of the villi, they are carried directly to the central lacteals, and thence directly to the thoracic duct, instead of going, as in the case of starches and proteids, into the portal circulation for elaboration in the liver. What is of equal interest and importance is that fats do not increase the glycogen of the liver, and hence relieve that organ of the elaboration necessary to convert this carbohydrate into material assimilable by the tissues. Moreover, the simple constitution of the fats—that is fatty acids and glycerine—with the small amount of oxygen in their constitution, compared with starches, would seem to make them more readily converted into heat and energy by the oxygen conveyed by the hemoglobin of the red blood corpuscles. I have thus at some length attempted to give my reasons for urging the increased use of the more palatable fats, since I am convined that the habits of our more civilized life tend greatly to a decrease in their use to the detriment of the general health, and the tendency to wasting diseases, even in those not suffering for the moment from anæmia or phthisis

12. The question of the use of alcohol has been much discussed within recent years, followed by a growing tendency to its complete disuse as a means of reconstruction of tissue. Speaking exactly, I believe it may be said that its use, except in patients with strong digestions, is contra indicated, except as a temporary stimulant, owing to its disturbing effects upon the glycogenic functions of the liver in the large proportion of patients of the neurotic type. If, however, ales and porters are well borne, I am of the opinion that they will prove of value as productive of heat and energy in the reconstruction of tissue.

13. With regard to the proteids, it is hardly necessary to say that meat, milk, eggs and similar articles of diet will be used up to the limit of their assimilation by the system.

14. Having dealt with the ordinary methods of treatment, it seems proper to refer to some of the details of special varieties of treatment developed within recent years. Among these I would refer first to that which, in patients deprived for a time of the privilege of active exercise, most nearly takes its place, viz, *massage*. Its value as an aid to the metabolic changes taking place in tissues cannot be over estimated. Sir Michael Foster remarks: "In this way an enormous metabolism may be excited, and yet so carried on that the body gains both in flesh and fat," and illustrates this by a case where a patient in fifty days increased in weight from 45 kilos to 60 kilos, the average daily ration of 100 grammes of proteids having been increased to 150 grammes over the whole period. Where active exercise becomes possible this, of course, may be largely dispensed with.

15 The effects of reduced air pressure in the climates of high altitudes has been frequently commented upon, and in view of the physiological explanations given of such influence upon hemopoiesis, or the increase of red blood-corpuscles, and the deepening of the inspirations, we seem to have the best reasons for endeavoring to imitate such conditions by means of a room so constructed, with a gas engine arranged so that the air pressure can be reduced. Another apparatus which, while lessening the air pressure on the chest walls, enables the patient to breathe air of normal density, is the "pneumatic cabinet." It varies in its details and completeness, but I am convinced that this direct means of deepening the inspirations and setting unused corners of the lung tissue to work, will have a definite therapeutic value if scientifically practiced.

16. As regards the dress of patients, it need only be said that loose-fitting clothing, with flannel underwear of sufficient warmth, is all that is required; while, of course, care in protecting the feet by felt shoes and overshoes in damp or cold weather would be exercised.

17. As regards the symptomatic treatment of patients, it is impossible here to enter into details. The most that need be said is, that the various measures which every physician practices for dealing with the several phenomena presenting themselves in this as other diseases would be drawn upon. Nasal and throat abnormalities or diseases will demand appropriate remedies, hemorrhages, night-sweats, and the errors of digestion, must receive proper attention; and, indeed, our full armamentarium will be called into requisition in dealing with the emergencies arising in the many patients of a sanatorium.

18. Personal hygiene in the case of sputum, the careful disinfection of the buccal and nasal cavities, and the careful instruction of patients in all matters of personal control, will necessarily become an important part of the duties of a medical superintendent. He has not only to consider the life of his patient while under his supervision, but he must further inculcate such rules of life as will be most likely to be beneficial to patients when they return to their homes, and enter once more into some occupation. Much might be said on this point did time permit. Personally, I am of the opinion that in very few instances can patients return to the sedentary pursuits of urban life with safety. The very conditions of success in the air-cure seem to point to out-door occupations as being alone those where the maintenance of good health can fairly be expected. It may be quite true that such conditions will be difficult or impossible of fulfilment; but we are dealing with a condition rather than a theory.

In concluding these necessarily imperfect remarks, I cannot overlook the, perhaps, most important part sanatoria will play in lessening the fatality from tuberculosis. They are essentially prophylactic, first, by receiving patients from small, often insanitary homes, where they are not only possible but almost certain centres of infection. Thus of the 663 tenements in 1896 in a single ward in New York, 37 per cent. had one or more cases of consumption, there being .81 of one case to every house; while in a statistical study made of the deaths in Huron County for ten years—1889 to 1898—I found that 33 per cent. of the total 633 deaths were of persons having a name recurring two or more times. Thus sixty names occurred twice, twenty-five names thrice, ten names four times, two names five times, six appeared six times, and one was found eight, and one nine times. It is futher found in answer to inquiries made on post cards accompanying specimens of sputum for examination in the laboratory, that a notable proportion report other cases at present existing, or having existed in the house.

But the sanatoria will prove a perhaps equally important factor in becoming educational centres from which persons will return to their homes and there preach the gospel of cleanliness. And, indeed, all evidence is going to show that our ideas of cleanliness will not avail to prevent danger of infection to the well where the expectorating consumptives live and are employed. Most stringent directions are given in sanatoria against coughing, except into some paper or cheese-cloth handkerchief which can be destroyed, since moist particles of sputum fly into the air, remain supended for several hours, and when such disappear they deposit their bacilli on walls and floors to rise again as dust. Dr. E R. Baldwin has published most interesting experiments where the washings taken without warning from the hands of ten private and eighteen sanatorium patients at Saranac Lake were inoculated into guinea-pigs. Half the private patients used cuspidors and occasionally their handkerchiefs, the rest used cuspidors or cloths. Their hands had been previously washed within from ten minutes to twelve hours. Of

the ten private patients eight were the means of inoculating either one or both of the test guinea pigs. Of five sanatorium patients whose washings were injected, two infected one guinea-pig only, the disease resulting being of a very chronic and localized type. It was noted that it was the private patients who insisted upon the use of handkerchiefs who furnished the cases of severe infection. The lesson thus taught is obvious.

In conclusion I wish to refer to a matter which I have referred to before in speaking to physicians regarding persons in their practice whom they find tuberculized. We have already seen how large a proportion are not diagnosed until the disease has become well advanced. It is apparent that if further delay in taking prompt action occurs, the double injustice is done both to the patient and to those living with him.

I am quite well aware how inconsiderate such patients and their friends often are, and how a physician, after losing a few patients by his honesty, is slow to tell a patient the truth. But a wise discretion will, in most cases, result in retaining the confidence of the patient and family, while the consciousness of having performed a plain duty will be a source of personal satisfaction. I quote the words of Dr. Trudeau, of Saranac Lake, a man beloved by all who know him, and one than whom no one has devoted for twenty years more singleness of aim and scientific energy to the study of the protean phases of this disease :

"As soon as the diagnosis of tuberculosis is established, particularly if the bacillus has been demonstrated in the expectoration, no matter how well the patient may appear, he should at once be told the grave nature of his malady, and an immediate removal from his surroundings should be urged, while it is explained to him that the best and possibly the only chance of restoration lies in prompt action and the adoption of thorough measures. Although obedience to this advice undoubtedly necessitates great sacrifices on the part of the patient, he will, if it is at all possible, rarely hesitate to make them, provided the gravity of the situation is plainly laid before him and the necessity for prompt action explained ; and if this is not done, he will be called upon to make the same sacrifices later, and when they can prove of little or no avail."

"The position physicians take who purposely deceive patients as to the nature of their malady by telling them the bleeding comes from the throat, or that they have influenza, malarial disease, or bronchitis, is difficult to understand, and does the patient a grave injustice."

"It will be justly urged that in a great majority of cases among the poorer classes it is absolutely impossible for the patient to follow the advice given. This is greatly to be regretted ; and while it in no way relieves the physician of the responsibility of making an early diagnosis, and advising prompt and radical measures to those who can afford to follow his advice, it is a strong plea for attempting to provide sanatoria for a greater number of these unfortunates, where they can find, at a moderate cost, the climatic and hygienic surroundings necessary for the treatment of their disease as soon as its presence is recognized."

It seems, therefore, evident that what the present situation demands for the treatment and prevention of this disease is before all things a recognition of its curability by prompt action in its early stage, of the certain danger to the patient in delay, and of a daily increasing danger to those with whom he is constantly associating.

To meet these several desiderata we may say that in practice, sanatoria properly constructed, equipped and officered, will alone be found adequate.

CONSUMPTION IN RELATION TO PERIODS OF SETTLEMENT IN ONTARIO.*

Mr. President and Gentlemen of the Institute:

I have to excuse my appearance before this audience for presenting a paper hurriedly prepared, and being a collection of notes rather than a series of worked out conclusions.

On collecting from year to year the returns of deaths from tuberculosis by counties I had noticed that certain groups of counties seemed to show a relatively higher death-rate from this disease than others; and had associated the fact with their different elevations, soils and exposure to lake breezes. Recognizing as has been general with sanitarians the association of the deaths from consumption with particular families, it occurred to me, as it has to others, that it might be possible to show this by collecting the names of all persons who had died in a county during a ten year period and finding what proportion the names which occurred twice, thrice, etc., bore to the total deaths for a county. Taking the counties of Lincoln, and Welland, I found of all the deaths 33 per cent. were names which occurred more than once, and that the average was 2.7 deaths to each of these names. It is but a step in the process to associate the deaths not alone with certain families, but with certain houses. This, of course, has not been possible with our death returns, but must depend upon a much more exact method of obtaining our statistics, that of house to house inspection. As an instance of this I may give the results of an inspection in the tenement house district of Ward IV in New York. In 1896 it contained 663 houses with a population of 18,323 or 27.6 to a house. Of these 248 or 37.3 of the whole were infected, with cases giving 0 81 of one case for every house in the Ward. Of the infected houses each had 2 81 persons infected or more than 1 in every 10 of their inmates. With such classes of facts, one gets into the habit of looking for illustrations of the same thing in all sorts of directions, and it has occurred to me to try with the very imperfect data at our disposal to determine whether the progress of what we now call "house infection" has any relation to the periods of settlement of different counties of the Province. It must be remembered that any attempt to draw conclusions cannot be very satisfactory: 1st, because of the census figures and those of the earlier years of registration in Ontario being necessarily imperfect especially as regards the deaths and their causes, and, 2nd, because the general health conditions, due to clay soils and imperfect drainage, have generally shown themselves associated with the relatively higher death-rate from all causes in certain counties.

Nevertheless the subject has some interest attaching to it, even from the standpoint of a historical retrospect of the periods of settlement of our different counties. For lack of time I have limited the study to the counties of Western Ontario, not including York, since I find that a large city tends to complicate the study. Had we the data available for the first half of the century, it would be of still greater interest to carry the study not only into counties, but into townships, and the nationality and character of their first settlers. For the last half of the century, something of this sort may, I hope, be worked out, since we now have collected in the vaults of the Registrar-General all the old marriage records since 1847, and many earlier, and to some of our ethnologists the work of separating the Macs from the Vans, and the Baptistes from the Hodges, will prove a most interesting and, I believe, satisfactory study, taken in connection with Mr Hunter's notes on "The Ethnological Elements of Ontario."

* Read before the Canadian Institute March 11, 1901.

Population and Deaths from Tuberculosis.—Table A.

County.	1825.		1840.		1851.		1861.		1871.		1881.		1891.		1899.	
	Pop.	Deaths.	Pop.	Deaths.	Pop	Deaths	Pop.	Deaths.	Pop.	Deaths	Pop.	Deaths.	Pop.	Deaths.	Pop.	Deaths.
Brant	3,373	..	13,125	..	19,725	19	25,943	30	21,546	32	21,362	38	.....	22	39,500	60
Norfolk	4,034	..	9,229	..	21,281	51	28,590	40	30,760	35	33,527	38	.....	25	33,588	33
Elgin	5,543	..	12,554	..	24,144	27	30,419	48	31,469	32	33,994	37	.....	25	47,012	53
Welland	8,327	..	12,402	..	20,141	25	24,955	30	25,760	37	31,771	45	.....	46	33,197	51
Haldimand	1,201	..	*	..	18,788	15	23,708	24	24,851	20	24,980	34	.....	17	25,403	22
Lincoln	9,900	..	14,724	..	19,500	33	21,341	40	21,683	28	21,942	66	.....	53	32,600	57
Wentworth	6,506	..	14,925	..	28,507	21	31,832	35	30,883	68	30,991	119	.....	39	85,463	135
Middlesex	3,209	..	13,183	..	36,663	32	56,058	33	66,769	48	73,335	136	.....	57	110,511	148
Oxford	3,111	..	11,721	..	32,638	27	46,226	53	48,237	42	50,159	62	.....	55	54,027	80
Waterloo	1,640	..	7,063	..	26,537	12	38,750	27	40,251	55	42,740	67	.....	62	54,710	61
Wellington	284	..	7,312	..	24,436	13	42,928	36	50,431	52	56,299	79	.....	41	64,419	68
Halton	3,423	..	11,247	..	18,322	7	22,794	31	22,606	24	21,919	26	.....	14	23,825	28
Peel	3,101	..	13,173	..	24,816	10	27,240	28	26,011	15	26,175	28	.....	17	26,953	40
Essex	4,553	..	9,175	..	16,817	7	25,211	35	32,697	48	46,962	87	.....	46	60,203	86
Kent	2,243	..	8,467	..	17,469	26	31,183	34	40,634	45	54,310	56	.....	38	63,620	98
Lambton	.....	..	.....	..	10,815	18	24,916	16	38,897	28	52,034	66	.....	53	59,500	76
Huron	.....	..	2,969	..	15,399	12	44,632	37	66,165	36	76,526	74	.....	66	72,380	81
Bruce	.....	..	.....	..	3,515	..	27,499	19	48,155	10	65,218	61	.....	54	70,021	87
Grey	.....	..	.....	..	12 089	10	36,391	26	57,352	18	70,539	36	.....	39	77,187	87
Perth	.....	..	1,402	..	15,545	..	38,083	..	46,536	15	53,693	45	.....	27	56,052	62
Simcoe	763	..	9,687	..	23,710	13	38,983	41	56,762	25	74,803	58	.....	64	77,743	117

* Includes Haldimand.

Death Rates per 1,000 from Consumption in groups of Counties.—Table B.

Brant, Norfolk, Elgin	1851	1.3	
	1861	1.14	
	1899	1.22	
Middlesex, Oxford, Waterloo	1851	0.7	
	1861	0.8	
	1899	1.1	
Welland, Lincoln, Haldimand	1851	1.3	
	1871	1.2	
	1899	1.3	
Perth, Simcoe	1871	0.3	
	1881	0.9	
	1899	1.3	
Essex, Kent, Lambton	1861	1 06	
	1881	1.40	
	1899	1.3	
Bruce, Huron, Grey	1861	.6	
	1871	.3	
	1889	.9	
Wellington, Peel, Halton	1861	1.03	
	1881	1.1	
	1891	1.1	

Turning, then, to our figures, as tabulated, the first thing we notice is that the counties fall roughly into several groups as regards periods of settlement. In the absence of any mode of transportation, other than water, we would expect and do find the counties along the Great Lakes, the scenes of our first colonization. One notable exception to this exists in Brant Co., with Haldimand, owing to the great tract of land given to the Six Nations, on the Grand River, in 1783, and of the establishment of settlements on the fine tract of land about the Mohawk village at Brantford, and the beginning of surveys thereon as early as 1800, and of Burford Tp. westward in 1797. The open, semi-prairie character of the Burford Plains and their warm gravel soils would seem to explain this early settlement.

By 1850 Brant was wholly settled. Norfolk and Elgin largely so. Similarly Welland, Haldimand and Lincoln there being as early as 1837 a complete series of dams and locks up as far as Brantford on the Grand. Middlesex, Oxford and Waterloo had relatively fewer settlers before 1840, but filled up rapidly in the next decade of enormous immigration, and excepting western Middlesex was fully settled by 1861.

The flat, clay lands of Essex, Kent and Lambton had, owing to their water fronts, early settlements, but not till 1871 can they be said to have been fully taken up.

Halton and Peel were practically settled by 1851, but Northern Wellington was not fully taken up till after 1861.

Simcoe had early settlement owing to its being reached readily by Yonge street and Lake Simcoe, but its great extent prevented its full settlement before 1871. Wentworth was fully settled by 1850.

The counties of the north-west, Huron, Grey, Bruce, and Perth, owing both to their great distance from Lake Ontario and the great holdings of the Canada Co. were settled latest of all. Not more than a third of Huron and Grey were settled by 1850, and almost half of Bruce, and settlement was not completed even as late as 1871.

In the grouping of counties I have calculated roughly the death rates per 1,000 from consumption from returns made either in the census or in the report of the Registrar-General. In some years it would seem as if the returns were not very well made; but we must take them as we find them.

The first fact noticed is that the rate stands for two districts high from the earliest period. The first is that of the old counties of Lincoln, Welland and Haldimand, and the other is that of Essex, Kent and Lambton. The history of the settlement of the two areas is different, the first being fully settled in 1851 and the other was represented at that time only by a rim of settlements. By this time, too, Brant and its groups had become old settlements. Now, what seems to be shown by the figures is that, especially in the Niagara and Brant groups, time enough had elapsed to have established a number of consumption centres either in families or in houses, and that while the rate of mortality in these two groups differs for the reasons of varying soils, yet both show that in them the disease had reached a degree of prevalence as great practically, or greater than is now seen. A decade or two later the Oxford and Waterloo group show the same seeming tendency to reach a point of notable prevalence of the disease when they had become old settlements. On the other hand, in these same years, when Huron, Grey and Bruce had scarcely a settler or began to be filled up, the disease had barely a foothold, but later as they attain in 1881 the age of old settlements, we see their death rate from this disease notably rise. The same is noticed for the Wellington and Perth group, and later in the County of Simcoe. Without attempting to make too much of the figures, I believe we have in them an illustration of the effects of several causes operating together which have shown a definite tendency towards an increased death rate from this house-disease when our new settlements became fully settled.

These several causes would seem to be

1st. The fact that usually it is the young, rugged men who go out as settlers, at times, alone, at times, with families.

2nd. That especially amongst settlers from Europe, it was usual in the early years for the women to labour more or less constantly in the fields.

3rd. The primitive character of the houses, small, not closely built and with fireplaces constantly ventilating the rooms.

4th. The absence of centres of the disease.

Gradually a change has come over our population:

1st. The young men have grown older and here and there one has broken down in health and become a centre of infection.

2nd. They have become well to-do, have built close, warm and good houses, but as a rule heated with stoves, or perhaps hot-air furnaces, with very imperfect ventilation.

3rd. The females of the household become, as a rule, housed up all the winter through, owing to the inconvenience often of going out in the deep snow and walking as may be done in town.

4th. Perhaps to a partial absence of means of mental stimulus and healthful excitement, both of which undoubtedly play a part in maintaining bodily vigor. Some physicians have thought that perhaps the cause of the physical declension so often seen has been in the exhausting character of the labors of these early settlers and the too early setting of the boys to assist in the heavy labor of clearing the forest.

Whatever factor has been the most important it would seem that there can be no doubt but that the races which have come in have not in all cases maintained their native vigor: while on the other hand the figures would seem to prove that in the best counties a period does come when the standard of living, the construction and conduct of the houses and the intelligence of the people has reached a point where this disease would seem to actually tend to decline. I have heard it remarked by physicians who have practised many years in our western counties that they have not been able to understand

how it happens that the great stalwart sons and daughters of many a Scotch or Irish family have gone one after another into consumption. In my experience this has not limited itself to these classes, but I think it is probably equally true in families like those of Welland and Lincoln being largely from the then frontier States of the Union.

I am inclined to think that while the process of acclimatization of persons from Europe may be a point of some importance as an explanation of the apparent facts I have stated, the difficulty lies principally in the artificial climates or "house atmospheres," which with the nature of the food and the character of the cooking have a daily bearing upon the hygiene of living of notably greater importance than the difference in climate between northern Europe and Canada. Indeed, as a matter of fact, there is no climate to which an inhabitant of the British Isles can emigrate which has so many qualities common to both countries as has old Canada.

It is the sanitation of the home and of daily life that in my opinion counts more in this so-called disease of house life than all other influences combined, this of course including the methods for dealing with cases of consumption when they do occur through infection in a family.

PART III.

ANNUAL REPORT OF LOCAL BOARDS OF HEALTH.

BRANTFORD.

REPORT OF MEDICAL HEALTH OFFICER.

BY F. G. E. PEARSON, M.D.

To the Chairman and Members of the Local Board of Health:

GENTLEMEN,—I herein submit to you the following report of the Health Department for the year ending Oct. 31, 1900.

Mortuary Statistics.—Excluding for the purposes of this report still births, 219 deaths have been recorded at the Registrar's Office during the past twelve months, as compared with 239 for the corresponding period the year previous, which, with the estimated population of the city as taken from the assessor's returns of 16,314, gives us a mortality rate of 13.43 per thousand.

Among the causes of death are to be found:

Typhoid fever and malarial typhoid 13, of which 2 were cases included in the last year's report, 2 outside cases.

Measles	1	Cholera Infantum	13
Whooping Cough	1	Meningitis	2
Pneumonia	12	All other causes	143
Tuberculosis and Phthisis	34		

Ages under 1 yr., 51; under 5 yrs., 62; over 60 yrs., 64: over 80 yrs., 16.

Contagious Diseases.—Including all classes of contagious diseases occurring in the city, there were 216 cases this year, as compared with 290 cases for the preceding twelve months, a decided decrease in almost every class, and were as follows:—

Smallpox.—During the year we were called upon to deal with one case of smallpox developing in a patient, who, the day or so previous had arrived home from Cleveland where he had been for some months, but thinking he had the la grippe came home for a rest; but unfortunately it turned out to be a typical case of small pox, which, as soon as known, was quarantined, and which, had it not been for the thorough, prompt and determined action on the part of the Board and officers in dealing with the patient and those with whom there was any possible danger of contact, I fear it might have been much more serious.

Scarlet Fever.—Although the cases of scarlet fever during the past year were of a very mild type, in fact so much so that the first cases, in a group, often were overlooked until infection had shewn itself in others of the family, or in children at school, where the child continued to attend, and also with the difficulties of home isolation where one after another of the family contracted the disease, we were fortunate in having but 59 cases with no fatalities, as compared with 110 cases with 4 deaths for the year before, and which number will be further reduced when the Isolation Hospital, now under way, is completed.

Typhoid Fever.—During the year 124 cases of typhoid fever and fevers have been reported at the office, 12 of which cases were traceable to outside sources of infection, leaving actually for the city 112 cases with 9 deaths, as compared with 152 cases with 16 deaths for the corresponding period the year previous.

The monthly record of cases was as follows, viz: Nov. 4, Dec. 3, Feb. 1, July 12, Aug. 27, Sept. 34, Oct. 30; while the distribution as to wards was: Ward 1, 36; Ward 2, 27; Ward 3, 6; Ward 4, 13; Ward 5, 30. Outside source, 12. And although there was a considerable decrease from the number of cases last year, yet there remains considerable that the Board can do to further reduce the prevalence of the disease in certain portions of the city, especially where the water supply is from wells, and where no proper means of sewage disposal and drainage exists; for no more striking illustration of this can be seen than that given in the above report in Ward 3, where up to six years ago when wells were the common source of drinking water, about 50 per cent. of the cases of typhoid occurring in the city was in this ward but since the action of the Board of Health at that time, in abolishing these wells, the percentage has been reduced almost to 5 per cent., and likewise is the same reduction seen in other parts of the city where the public supply has been substituted for the wells. For noting the percentage of cases using the different water supplies, we find:

Well water users	71	City water users	20
Well and City users	21	Outside sources	12

And this is made the more important since ⅔ of the city is supplied by the public supply, which, from repeated tests, both at the local office and by the Provincial bacteriologist, proves invariably to be of a very high standard of purity, while that from wells is almost universally polluted.

Therefore I would again advise that not only should such portions of the city as Homedale, West Brantford, Eagle Place and eastern portions of Wards 4 and 5 be supplied with a public sewerage system, but also that the Board order all wells closed in these and other infected localities, and to this end I recommend that the list of wells that follow in the Sanitary Inspector's report be passed upon and ordered closed since they have been tested and found polluted with organic matter, or sewerage, or both.

Diphtheria and Croup.—During the past year we have had but 7 cases of diphtheria and croup, with 1 death, as compared with 20 cases, 2 deaths, last year.

Of measles, chickenpox, whooping cough, etc., 37 cases with 2 deaths have occurred.

Tuberculosis.—Although Tuberculosis is not included among the list of infectious and contagious diseases to be particularly dealt with by the Board, yet from the increasing number of deaths that are annually occurring from it, I think more than passing notice should be taken of this disease by the Board, for it is now conceded to be truly infectious, and which produces a death rate of almost double all other contagious diseases together; therefore I bring the matter up that patients and those who have charge may use every effort to thoroughly disinfect all discharges, &c., and that in case of death, the premises should be thoroughly disinfected. And secondly, because at present, we have no proper means for the treatment and isolation of these cases, many of which, in the later stages of the disease, find their way to the hospitals to mingle with other patients of lowered vitality, who may be susceptible to the contagion. Therefore, I think until the city has some sanatorium, for such cases, this Board should confer with the Hospital Board and see if a couple of wards could not be set aside in the present extension for this class of patients.

Garbage System.—For years past the Board has seen the requirement for two means of checking contagious disease; the one being an Isolation Hospital, which I am pleased to learn will soon be under course of construction; the other was that of a systematic means for the collection and disposal of garbage and house refuse, to which I wish this Board to again call the attention of the Council, and try to have inaugurated (upon the plans developed by the Sewerage and Garbage Committee) not later than January, 1901.

All of which I respectfully submit for your consideration.

Report of Sanitary Inspector.

GENTLEMEN:—The following is a report of the Sanitary work for the past 12 months

House inspections 470.
105 notices served for contagious diseases.
125 notices to make sewer connections.
111 notices to close wells.
90 notices served on city contractor.
44 privy pits, notices served.
25 dry earth, notices served.
67 gen. nusiances, orders served.
61 pits ordered cleaned and abandoned.
38 dry earth closets ordered cleared regularly by contractor.
50 dead animals removed.
15 summons served, and prosecution made in case of neglect to follow orders issued.
Over three hundred wells, water samples taken, and tests applied

Outside those already condemned, the following are considered unfit for use:—

T. Truss, 104 St. Pauls Ave.
C. Brittanc, 109, 111 St. Pauls Ave.
T. Spence, 35 Victoria St.
Mr. McNeesh, 172 Albion.
J. Kerr, 28 James.
Mr. Strachan, 255, 287 Wellington St.
Mr. Fowler, 127 Eagle ave.
Mr. Scham, 193 West Mill.
Mr Boulds, 71 Sheridan.
Mr. G. Lambden, 70 Superior.
J. Glesson, 157 Albion.
Miss Lows, 76, 78 Alfred.
Mr. Passmore, 128 Erie Ave.
J. Savage, 12 Ann.
J. Croom, 15 Ann.
Mrs. Bellhouse, 275 Darling
P. Cahill, 158 and 160 Albion.
E. Mires, 179 Albion.
J. Fitzsimmons, 184 Albion.
Mrs. E. Hollinrake, cor. Albion and James.
J. Lang, 165 Albion.
Mr. H. Whitehead, Usher Place.
Jno. Play, Princess.
Judge Jones, 5 to 17 Main.
Mr. Ramsay, 27 Mohawk.
——— 268 Wellington.
Mr. Tipper, 61 Northumberland.
J. Hamblin, 5 Fair Ave.
Crandall, 51 Mohawk.
Ed. Denton, 198 Brant Ave.

(Sgd.) J. A. CHAPMAN,
SANITARY INSPECTOR

BELLEVILLE.

Report of Medical Health Officer.

By R. Tracy, M.D.

To the Members of the Local Board of Health :

Gentlemen,—I have the honor of presenting the report of the sanitary state of Belleville for the year ending November 1st, 1900.

The Sanitary Inspector made his usual inspection of water closets, yards and cellars in May, and occasional inspection when required during the summer.

The city has been fairly clear of infectious cases since April, having stamped out the scarlet fever which was almost epidemic through the Province in the fall and winter of 1899. The Board purchased a formaldehyde generator and thoroughly disinfected the clothing and rooms of all infected houses. We had in all reported 89 cases of scarlet fever, with 4 deaths; 5 cases of diphtheria, and one death; no cases of measles; about 40 cases of whooping cough, no deaths; and of typhoid fever 14 cases and 3 deaths. Twelve of the cases were contracted out of city limits, and I have not had a case of scarlet fever reported for the past three months, and the city is entirely free from it and I trust will remain so. I made two examinations of milk during the summer and found it up to standard in butter fat. I may say that cow byres are inspected when necessary and anything found wrong was immediately attended to. In July I received a telegraph from the medical health officer stating that a man who was in Belleville one week from time of leaving to return had developed smallpox. I wired asking name of parties he had stopped with when here; having got reply I at once placarded house, had all clothes used by party on bed thoroughly fumigated by formaldehyde, every room in and clothing of all kinds was treated in same manner, and vaccinated all in the house and all who as far as I could ascertain had visited them, placed house under quarantine and waited results, with the hoped result that no case occurred. The party if he had smallpox contracted it in Rochester and we were fortunate enough for him to return home before developing. I may say that I have noticed that smallpox has been prevalent in a great many parts of New York for the past year and it seems to me that some precautions ought to be taken at Charlotte particularly during the season of navigation. Belleville has no less than five steamers calling here from Rochester every week. I think the Provincial Board should look into this question.

Improvements are gradually being made in our sewerage system; wells are being closed up and cess pits going out of existence and dry earth closets built in their place. Consumption though seems to be on the increase and I think steps should be taken to build sanitoriums, for such cases the northern part of this county would be an ideal place for one, and I hope soon to see one established. I notice also that more deaths occur from carcinomæ than formerly, and journals both from Europe and America mention the fact. One thing I would like to draw your attention to is that medical health officers have now to initial every death certificate, for which they get nothing. I think that a small fee should be paid by the Government to the M. H. O. for such work, and also the Board should draft a form to be used on railways in shipping bodies mentioning whether contagious or not, something like the State Board of Health of Michigan now in use here on the G. T. R.

HAMILTON.

Report of Medical Health Officer.

By Isaac Ryall, M.D.

To the Chairman and Members of the Local Board of Health :

Gentlemen,—The sanitary condition of the city for the year ending 31st October, 1900, was as follows :

Three thousand four hundred and seventy-three cases of contagious diseases were reported and duly registered at the health office; this large number was due to an epi-

demic of measles which commenced early this year; 3,041 cases of measles were reported with 11 deaths, the latter I consider to be very short of the number of deaths due to this disease, probably they were registered as deaths from pneumonia or bronchitis; one physician has stated that he knew of 30 deaths caused by measles.

Ninety cases of diphtheria were registered with 19 deaths, this gives 12 cases less than in 1899 and 70 cases in 1898.

Scarlet fever cases number 145 with 6 deaths; in 1899 there were 123 cases reported; and in 1898, 214 cases.

Typhoid fever has been prevalent over the country, but we have had fewer cases in Hamilton than in 1899, which then numbered 74; this year 61 cases have been reported with 11 deaths; in 1898 only 37 cases were reported.

Several cases of typhoid have been admitted to our hospitals from surrounding districts which are not included in this report.

The other contagious diseases registered were: 93 cases of chicken pox, 11 of mumps, and 32 of whooping cough, with one death; this mortality is as unreliable as that from measles.

As a good deal of annoyance occurred last year in regard to allowing children to return to school after infectious diseases, I desire to state that the time which should elapse before any children from the houses affected should be re-admitted to school was fully discussed by the members of the Hamilton Medical and Surgical Society some years ago and regulations were made by that body for guidance which have been carried out ever since. I think that rules on that matter should emanate from the Provincial Board of Health for general adoption in all schools either public or private.

Our citizen mortality numbers 726—males 371, females 354. The assessors' enumeration gives us a population of 52,665; this shows a death rate of 13 78 per 1,000.

I expect that the Dominion census will give a much larger population.

Seven citizens died while absent from the city and whose bodies were brought back for burial and are included in our mortality.

Several deaths have occurred from accidents, including burns, scalds, drowning, railway, smothering, etc, and one from suicide.

Seventeen deaths were recorded of inmates of the House of Refuge, 7 at the Home of the Friendless, 2 at the Aged Women's Home, and one each at St. Mary's Orphanage, Girls' Home, Rescue Home and city jail.

Several complaints have been made of the muddy condition of the city water. If the cause was due to the condition of the reservoir or filtering basins, does it not seem strange that the whole system of water supply does not become equally affected at the same time? I have noticed at times at the City Hall the water from the tap become muddy while running and then become clear in a very short time.

I cannot attribute any of our sickness to muddy water, but would advise any of our citizens who suffer from it to make a flannel bag, attach it to the tap and allow the water to filter through it; it will catch all the solids. The bag is easily made and cheap enough to reach all conditions of the people. The present inconvenience I expect will soon be remedied.

The bi-weekly scavenger system during the summer months seems to have given satisfaction.

Very frequent complaints have been made of some scavengers; this is a matter which should be remedied. The complainants blame the scavengers and the latter blame the people. Road making has interfered somewhat with scavengers in some districts.

I append the Health Inspector's Report, also the usual forms showing how diseases and deaths are distributed by wards.

Report of Sanitary Inspector.

Hamilton, City Hall, Nov. 13th, 1900.

To Dr. Ryall, Medical Health Officer:

Sir,—Below please find synopsis of the work done by your three inspectors from the 1st day of November, 1899 to the 31st day of October, 1900, inclusive.

Yours respectfully,

JOHN PEACOCK.

Number of	inspections made	5,320
"	privy vaults notified to be cleaned	493
"	" permits issued for new ones	7
"	" permits issued to contractors to clean	1,000
"	" abolished	44
"	cesspools notified and cleaned by contractors	28
"	" permits issued for new ones	5
"	" abolished	7
"	dry earth closets notified to clean	26
"	sewer connections to make	20
"	" found defective	104
"	foul drains to abolish	14
"	stagnant water to abolish	20
"	dirty premises to clean	5
"	other nuisances to abate	601
"	houses placarded for infectious diseases	173
"	houses fumigated by inspector	215

Milk Inspector's Report.

Number of	licenses issued	213
"	samples tested	855
"	dairies inspected	176
"	of dairies found in fair condition, notified to clean	3
"	of shops inspected	131
"	of cow byres found in good condition	81
"	" " fair condition	64
"	" " dirty condition	1

Yours respectfully,

L. A. MacDonald,
Milk Inspector.

Scavenger Work.

Work done by your five scavengers:

Number of	team loads of garbage and refuse collected	9,595

Burnt at Crematory.

Number of	dogs	351
"	cats	143
"	fowl	65
"	barrels and boxes of fish	21
"	loads of used rags, etc., from the city hospital	54
"	beddings, etc., from infected houses	15
"	pigs	2
"	boxes of wild fowl	4

A.D. 1900. Table showing Mortality by Cemeteries.

Fiscal year—Nov. 1, 1899, to Oct. 31, 1900.	Interments Hamilton cemetery.			Citizens buried in Hamilton cemetery.			Citizens buried in R. C. cemetery.				Citizens of all creeds buried elsewhere.				Combined city mortality.			
Months.	Total burials.	Non-resid.	Still born.	Citizens.	Males.	Females.	Citizens.	Males.	Females.	Still born.	Citizens.	Males.	Females.	Still born.	Citizens.	Males.	Females.	Total still born.
November	47	10	3	34	19	15	6	3	3	1	5	3	2	....	45	25	20	4
December	52	7	5	40	25	15	10	7	3	....	6	1	5	....	56	33	23	5
January	40	8	1	31	16	15	10	6	4	....	5	3	2	....	46	25	21	1
February	39	4	3	32	12	20	6	5	1	....	6	2	4	....	44	19	25	3
March	47	8	3	36	20	16	16	8	8	1	9	3	6	....	61	31	30	4
April	76	9	8	59	29	30	14	6	8	1	9	4	5	....	82	39	43	9
May	49	4	6	39	20	19	15	8	7	....	13	6	7	1	67	34	33	7
June	48	2	5	41	25	16	6	5	1	....	4	4	....	....	51	34	17	5
July	58	2	4	52	25	27	18	6	12	1	18	6	12	1	88	37	51	6
August	62	6	4	52	26	26	8	6	2	....	6	2	4	....	66	34	32	4
September	48	4	1	43	21	22	9	6	3	....	8	5	3	....	60	32	28	1
October	49	6	3	40	21	19	15	7	8	1	5	1	4	....	60	29	31	4
	615	70	46	499	279	240	133	73	60	5	94	40	54	2	728	372	354	53

1900. Deaths by Wards.

—	1	2	3	4	5	6	7	Total.
November	4	3	11	11	6	4	6	45
December	3	9	11	4	6	14	9	56
January	4	7	8	6	3	8	10	46
February	6	5	6	7	3	6	11	44
March	2	5	6	7	17	13	11	61
April	5	8	14	15	12	17	11	82
May	8	8	9	13	6	15	8	67
June	1	6	6	13	5	8	12	51
July	11	7	7	12	12	18	21	88
August	4	5	7	14	14	10	12	66
September	6	5	9	2	8	12	18	60
October	3	6	8	7	10	16	10	60
Totals by Wards	57	74	102	111	102	141	139	726

Special Diseases—years compared.

	1898.	1899.	1900.
Diphtheria	162	102	90
Scarlet fever	214	123	145
Typhoid	37	74	61

Special Diseases by Wards.

	1	2	3	4	5	6	7	Total.
Diphtheria	14	14	7	15	7	21	12	90
Scarlet	29	11	27	31	5	19	23	145
Typhoid	6	9	6	7	1	8	24	61
	49	34	40	53	13	48	59	296

Contagious Diseases by Months.

—	Diphtheria.	Scarlet.	Typhoid.	Measles.	Chicken pox	Whooping cough.	Mumps.
November	10	22	5	2	1	16	.....
December	17	12	2	4	1	2	.....
January	11	24	.....	5	25	2	1
February	6	15	1	70	19	1	.....
March	9	26	2	634	20	4	2
April	6	16	1	1,270	13	1	.....
May	3	13	2	1,000	6	.....	4
June	6	5	1	47	.....	.....	.....
July	4	7	1	7	1	.....	2
August	5	.....	10	2	.....	.....	.....
September	3	.....	28	.....	3	1	1
October	10	5	8	.....	4	5	1
	90	145	61	3,041	93	32	11

Mortality of Children under 5 Years.

—	1	2	3	4	5	
November	10	4	1	2	1	18
December	9	1	2	1	2	15
January	7	2	.....	.....	1	10
February	7	2	1	1	.....	11
March	12	.....	2	1	1	16
April	17	9	.....	.....	.....	26
May	16	2	.....	1	.....	19
June	8	4	1	.....	.....	13
July	22	.....	2	.....	.....	24
August	27	2	.....	2	.....	31
September	13	2	2	.....	1	18
October	11	2	2	2	.....	17
	159	30	13	10	6	218

LONDON.

Report of Medical Health Officer.

By Thos. V. Hutchinson, M.D.

To the Chairman and Members of the Board of Health :

Gentlemen,—I have the honor to submit my annual report upon the sanitary condition of the city and other matters relating to the public health for the year ending November 15th, 1900.

Five hundred and ten deaths occurred during the year, exclusive of 18 still-born, which are not counted in mortuary statistics.

Consumption, as usual, heads the list with 60 deaths. Pneumonia comes next with 51, and organic disease of the heart with 23. Paralysis 18 and cancer 17, the latter disease still being on the increase in Ontario

There were only 16 deaths from cholera infantum. Nine deaths were caused by violence, that is, railroad accidents, hanging, lightning, gunshot wounds, and several by poison. Twelve deaths were caused by premature birth.

The very satisfactory number of 41 deaths were due to old age. The ages ranging from 85 to 99 years, being the largest number reaching 85 and over in ten years.

The death rate for the year was 13 in every 1,000 of the populatior. This is not quite as low as last year, but it must be remembered that our hospital facilities are better and a larger number of people from outside the city came in for treatment.

Two hundred and eighty-five cases of infectious diseases, exclusive of consumption, occurred during the year, namely :—Scarlet fever 151, typhoid fever 75, diphtheria 59. Of the 285 cases 212 were attended at Victoria Hospital. The deaths from the whole number were as follows :—Typhoid fever 9, diphtheria 6 and scarlet fever 6. This is the lowest number of deaths from infectious diseases in the city in eleven years, and may be taken as evidence of its sanitary condition.

The number of premises, closets and yards reported unclean is also less than last year, owing partly to the larger number connected with the public sewers, and the citizens more willingly co-operating with the health authorities in keeping their premises clean.

In the spring there were 8,661 places visited by the sanitary inspectors ; 1,799 were reported unclean, as compared with 2,163 last year, a reduction of the number of unclean premises of 364.

The population of the city is now 39,050.

The quality of milk supplied the city is still good. The average percentage of 213 samples of market milk examined during the year, exclusive of 23 samples examined for private persons, was over 4 per cent. The samples were cleaner than in former years, and to this and the good quality may be attributed the small number of deaths of infants from derangements of the digestive organs. Nine thousand quarts are sold daily in the city. Two samples had been watered, one had cream added, and one buyer was unfit for dairy purposes by reason of uncleanliness. One hundred and forty persons are employed in supplying the city with milk.

In former reports I have referred at some length to the rapid increase in the number of deaths from tuberculosis in its various forms, and endeavored to show the contagiousness of the disease and the urgent necessity, if we desire to lessen and stamp out as far as in our power lies this, the most dreaded of all diseases, not excepting small-pox to insist on complete isolation.

It should be a matter of great satisfaction to boards of health, physicians and all thinking men, that in its wisdom the Ontario Legislature at its recent session passed an act whereby municipalities may erect sanatoria for consumptives and receive Government aid in purchasing lands and the erection of buildings to an extent not to exceed $4,000, and also a promise that towards maintenance the sum of $1.50 per week would be granted for each patient.

It has been clearly proved in Germany, a country in the van of medical progress, that the only satisfactory method by which this disease can be lessened, and as far as

possible stamped out, is to erect sanatoria at various centres and conduct them in accordance with the strictest sanatoria precautions.

It is a matter for congratulation that the citizens and local physicians have taken up this subject in earnest, and that the city and county councils have heartily endorsed the matter and have referred the subject to the favorable consideration of incoming councils.

All of which is respectfully submitted.

OTTAWA.

Report of Medical Health Officer.

By A. Robillard, M. D.

To the Chairman and Members of the Board of Health.

Gentlemen,—I beg to lay before you the Annual Report of the Health Department, for the year ending October 31st, 1900. In so doing I am pleased to note the fact that the past year has been one of harmonious, steady and earnest endeavor on the part of your Board, in so far as lay in their power, to cater to the needs of the city, in a sanitary point of view.

I am also pleased to record the fact that notwithstanding the very unusual circumstances in which was placed a large section of the community, after the disastrous fire of last spring, the public health was not to any very large extent affected thereby, thanks no doubt, to the prompt and effective measures adopted to relieve the pressing needs of suffering fellow beings.

The total mortality for the period comprised in this report, shown in Table I, here appended has been from all causes 1146 exclusive of still births; or 27 deaths less than last year notwithstanding the natural increase of our population.

With our estimated population of (60,000) sixty thousand this gives us a death rate of 19 and a fraction per thousand; a very fair showing in my estimation. 490 deaths out of the total mortality were of children of five years of age and under including the death roll of the House of Bethlehem for the same period, the records of which institution appears in Table IV here attached.

Though at no time during the year were infectious diseases prevailing to any alarming extent, there has been however a larger number of these cases than during the previous year, as evidenced by the records of the isolation hospitals in Table II here appended; 408 cases were isolated in these hospitals during the past year; and 52 of these were from surrounding suburbs outside of the city. To this increase in the number of cases may also be ascribed the unusually large number of fatalities resulting from infectious diseases due to a certain extent to the conditions arising out of last spring's fire as may readily be conceived as following the unavoidable overcrowding of two or more families in one domicile; and then again as resulting from the fact that in many instances families had to shelter themselves as best they could, under tents or in buildings unfit to properly protect them against the weather. To the same causes may be ascribed disease of the respiratory organs, such as pneumonia and bronchitis recorded in April and May last.

Aside from diarrhoeal and other diseases incidental to dentition, which during the summer months are fatal to so many little ones, chiefly as a result of improper feeding both in quality and in quantity by far the largest factor in our death roll is tuberculosis; 112 victims succumbing to that scourge of the human race, during the past year. That typhoid fever has been somewhat more prevalent than it should for a few years past is now to a certain extent, at all events accounted for in the fact that our water supply was not what it should have been owing to the very defective condition of the intake pipe discovered only this past summer, but in all liklihood existing for a number of years.

Among the many subjects which during the past year have engaged the attention of your Board, the most important possibly, was the sorely felt need of this city for an isolation hospital adequate to meet the requirements of the community. Your earnest effort to secure the best available site possible and the maturing of plans so as to enable the

Corporation to proceed with the work of erection next season, should have the approval of all well thinking people. Another subject which to a certain extent also engaged your attention was the inauguration of a proper scavenging system, one of the most pressing needs of the city. To a very large majority of our people, the collection of and proper disposal of garbage and house refuse is undoubtedly a question of vital importance. However regrettable, for reasons beyond the control of your Board the realization of this sorely felt need had to be deferred. That next year's Board will find means to inaugurate such a system is a wish in which most people will concur. Endowed in the near future with a well equipped isolation hospital ; with a system of scavenging in accordance with the laws of hygiene; with a more wholesome supply of water for domestic use ; with the completion of the main sewer and subsidiary drains, enabling the people in all parts of the city to improve the sanitary conditions of their surroundings by the removal of the evil smelling privy pit and cesspool ; with purer supply of milk resulting from the improved methods of storage treatment and mode of delivery to be inaugurated early next spring by the Dairy Association, Ottawa will be well in the vanguard of sanitation, and one of the healthiest cities on the Continent to live in. All these are not as yet accomplished facts it is true, but they are coming and will be realized before the second year of the twentieth century has been rung in.

The quantity and importance of the work done in the sanitary branch of this Department is but fairly represented in the Sanitary Inspector's comprehensive report, to which I beg leave to refer you for all the details of the work more immediately under his control.

In conclusion, I deem it but just to acknowledge the valuable aid given me by the Sanitary Inspector in carrying out the work of this Department, and it affords me much pleasure to bear evidence to the pleasant relations existing throughout the year between the Board and the officials.

Table I.

Total mortality from all causes for the year 1900.

Diseases.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	Total.
Apoplexy	1	5	1	1	3	1	3	....	....	1	...	2	18
Appendicitis	...	....	....	....	1	....	....	1	....	....	....	..	2
Asthma	1	1	....	1	2	....	..	....	....	1	2	....	8
Anæmia	....	....	....	....	....	....	....	....	1	....	1	....	2
Abcess	2	2	....	....	1	....	2	....	..	....	....	....	7
Aneurism	1	....	....	....	....	....	....	....	....	....	....	....	1
Alcoholism	....	....	....	1	....	....	1	....	1	...	....	....	3
Accidental, by fall	....	....	1	2	....	....	1	...	1	1	1	....	7
" Drowning	....	1	....	....	....	....	1	....	2	6	1	....	11
" Burns	....	....	....	1	....	2	....	..	1	1	....	....	5
" Explosion	2	....	....	....	....	....	....	....	....	....	....	....	2
" Railroad	....	....	1	....	....	....	....	....	1	1	....	1	4
" Poison	....	....	....	..	....	1	....	....	....	....	....	....	1
" Elevator	....	....	....	....	.	....	....	....	....	....	1	....	1
" Suffocation	....	....	....	....	....	....	1	....	....	....	...	1	2
" Electricity	....	....	....	....	....	....	....	1	....	....	....	....	1
Bronchitis	2	2	5	2	4	9	6	1	1	2	1	2	37
Congestion of lungs	1	2	1	....	1	1	1	1	1	1	2	2	14
Cerebritis	....	....	2	1	....	....	1	....	2	....	....	1	7
Cystitis	....	....	....	1	2	1	1	1	2	....	1	....	9
Diphtheria	4	4	6	3	5	4	3	1	3	....	4	....	37
Diabetes	....	....	2	....	1	1	....	....	....	....	....	....	4
Dropsy	....	....	2	....	....	....	....	....	1	1	....	1	5
Dysentery	....	....	....	....	....	....	....	....	2	....	....	....	2
Diarrhœal and other diseases incidental to dentition	4	5	14	7	23	11	12	40	63	44	18	9	250
Eclampsia	....	....	2	.. .	....	1	....	2	....	. ..	.	...	5
Epilepsy	....	....	....	....	1	1	1	....	....	....	....	....	3
Embolism	....	1	....	....	....	2	....	....	....	1	....	....	4
Gastro Enteritis	5	1	1	1	3	....	1	2	1	3	1	....	19
Hemorrhage	3	2	....	....	....	1	1	....	....	1	....	. ..	8
Heart diseases	4	3	4	5	5	3	9	7	4	2	2	2	51
Hepatitis	....	3	2	....	2	....	....	1	....	1	2	....	11
Heart failure	....	1	1	2	2	1	....	2	1	1	..	1	12
Hydrocephalus	....	....	....	1	....	....	....	....	....	....	....	....	1
Infantile debility	4	6	2	6	6	4	12	4	1	4	....	2	51
Senile "	...	....	2	2	2	3	3	....	. .	....	3	....	15
Laryngitis	....	....	....	1	....	....	....	....	....	....	....	....	1
Congen. Malformation	1	....	....	....	....	....	1	....	....	1	1	....	4
Meningitis	1	5	2	1	2	3	4	2	12	3	2	2	39
Malignant Tumors	6	6	3	2	3	4	1	4	1	3	6	....	40
Nephritis	....	1	1	3	1	3	...	3	....	....	3	2	17
Neurasthenia	....	....	....	....	....	....	....	....	1	....	....	....	1
Old Age	3	5	1	10	7	8	4	6	5	3	4	2	58
Paralysis	2	1	1	3	3	1	3	4	3	2	1	4	28
Pneumonia	7	4	9	11	11	21	17	4	3	5	3	3	99
Peritonitis	4	1	1	1	3	1	3	3	....	.. .	5	2	24
Premature Birth	2	4	....	1	2	4	5	...	3	1	....	2	24
Pleurisy	....	....	....	3	1	....	2	....	....	....	....	....	6
Rheumatism	....	. ..	....	1	1	....	2	2	....	1	....	....	7
Scarlatina	....	....	1	1	1	1	2	1	2	....	...	1	10
Shock after operation	....	1	....	..	....	....	....	....	....	....	....	....	1
Scurvy	....	1	1	....	....	....	....	....	....	....	....	....	2
Syncope	....	..	....	....	....	....	....	1	....	...	1	....	2
Septicæmia	1	1	3	....	1	1	1	2	....	2	2	1	15
Typhoid Fever	3	1	....	..	2	....	1	1	1	3	4	3	19
Tuberculosis	8	8	8	10	11	14	13	10	8	11	7	4	112
Uræmia	....	1	1	....	....	1	1	....	....	.. .	2	1	7
Whooping Cough	....	....	....	....	....	....	....	....	....	3	4	2	9
Unknown causes	..	....	....	....	....	....	....	....	....	2	1	1	4
Totals	71	70	81	84	114	110	118	107	128	113	86	54	1,146
Exclusive of still births	9	7	11	8	10	7	5	9	6	4	5	4	85

TABLE II.

Showing number of cases treated in hospitals for infectious diseases during the year 1900.

	Protestant Annex.			R. C. Annex.		
	Diphtheria.	Scarlatina.	Tonsilitis.	Diphtheria.	Scarlatina.	Measles.
Admitted during the year.	83	75	2	150	94	4
Discharged	74	72	2	135	89	4
Deaths	9	3		12	5	
	N.B.—19 of these cases were from outside the city.			And 33 of the above cases were from outside the city.		

TABLE III.

Showing number of infectious diseases reported during the year 1900

Diphtheria including croup	170
Scarlet fever	200
Measles	10
Typhoid fever	124
Total	504

N.B.—The above figures, in so far as typhoid fever aud measles are concerned are not reliable. These diseases are not properly reported by physicians. Out of the total number of cases of typhoid fever reported 42 cases were from outside of the city.

TABLE IV.

Record of the House of Bethlehem for the year 1900

How disposed of.	No. of Cases.
Admitted during the year	218
Placed outside or returned to parents	112
Died during the year	84
Remaining in house on Nov. 1st, 1900	22
Total	218

REPORT OF SANITARY INSPECTOR.

To the Chairman and Members of the Board of Health.

GENTLEMEN,—I beg to submit for your consideration my Annual Report showing the work done in the Sanitary Department during the year ending ending Oct. 31st, 1900.

In addition to the work in tabulated form undermentioned there have been:

274 houses disinfected.
88 cards put up.
72 cards taken down.
14 drains tested for defective plumbing.
88 written notices to property owners, tenants and others, the balance being verbal.
8 summonses were issued, 4 being nonsuited and 4 convictions were obtained.
3521 privy vaults were cleaned.

Infectious Diseases —The disinfection of houses almost doubled that of last year owing to the outbreak of scarlet fever and diphtheria, which was assisted considerably in its development by the temporary structures occupied by those infected in the fire swept district.

Dumping Grounds.—The two dumping grounds owned by the city have received due attention, and the general absence of complaint certifies to the effective work being done.

Removal of Garbage.—There is a decided improvement in the conditions relating to the carrying of garbage through the streets of the city since the new regulations were enacted.

The Various Trades.—The inspection of the various trades which may become offensive has been continued, resulting in sanitary improvement in several establishments, and the closing up of business in two instances.

Dairy Farms.—I found that a number of the nuisances complained of in my last report were remedied, and I also noticed a marked improvement in the cleaning and grooming of the cattle, but a want of proper milk storage in winter separated from possible contamination from the dwelling existed in many cases.

Inspection of Yards and Premises.—The disastrous fire which swept a great portion of the west end of the city left a large number of nuisances of one kind and another exposed, and consequently necessitated a rigid inspection of the whole district, which was made and all nuisances abated, otherwise very little inspection of yards has been made owing to our small sanitary staff, but what has been done, together with the complaints registered at the Health Office requiring urgency, proves beyond a doubt the extreme need of a scavenging system.

Plumbing.—The very small percentage of complaints relative to defective plumbing registered at the Health Office the year previous, has still further decreased this year, which clearly demonstrates the substantial nature of the work done in this city.

Supervision of Ice Cutting.—The city being almost surrounded by water a circle of about 15 miles in length requires to be traversed to supervise the prohibited as well as permitted ice fields convenient to the city; therefore, the new regulations enacted this year have been opportune: and their enforcement has prevented suburban dealers from bringing a quantity of ice of a doubtful character into the city.

In conclusion I wish to acknowledge with thanks the valuable aid I have received from the Chairman of the Board and the Medical Health Officer in the discharge of my duties. I also willingly bear testimony to the effective work done by my sole assistant in the Sanitary Department.

Respectfully submitted,
(Sgd.) JOHN CAWTHRAY,
Sanitary Inspector.

TABLE I.

Classified list of nuisances under notice of the Department during the year.

Description of nuisances.	Reported by sanitary staff, tenants and others.
Refuse on streets, vacant lots, etc	73
Filthy premises	811
Water on streets, lots, etc	46
Illuminating gas	5
Offensive odors from sewer gas entering houses	17
" from other sources entering houses	53
Drains choked	24
Sinks untrapped or otherwise defective	2
Soil and waste pipes defective	30
Water closets broken or otherwise defective	2
Water service pipes broken	4
Roofs leaking	3
Water in cellars	67
Piggeries too near dwelling or otherwise unsanitary	5
Want of drainage	24
Offensive trades	7
	1,173

TABLE II.

Inspection of the various trades.

Name of trade.	Reported by Sanitary Staff.		
	No. of places inspected.	No. of nuisances found.	Trade closed.
Butchers' shops and premises	20	3	None.
Slaughter houses	5	None.	None.
Pork packers	3	1	None.
Junk dealers	4	2	1
Hide dealers	1	None.	None.
Tallow renderers	2	None.	None.
Dairy farms	19	5	None.
	54	12	2

Tabulation of Dairy Farms inspected.

Township.	Sample of water collected for analysis of well.	No. of premises inspected.	Privy too near cow byre.	Foul store room.	Pigs in cow byre.	Well too near byre.
Gloucester .... Nepean	1	19	1	1	2	1

TABLE III.

Inspections made to investigate the origin of disease, proposed drainage and other sanitary requirements

Areas and premises inspected.	No. of houses and premises.	Object of investigation.	Nuisances found.
Area including Division, Elm, Lorne Ave., Lloyd, Preston, Rochester, 1st Ave., Sherwood, Bridge, Ottawa, Queen St. west, Willow, Eccles, Spruce, Maple, Poplar, Pine, Middle, Somerset, Elizabeth, Perkins.	879	Garbage and other filth.	343
Friel, King, Perkins	32	Proposed drainage.	19
Isabella, Nicholas, Rideau, Victoria	4	Origin of scarlet fever.	4
MacLaren, Chapel, Cambridge, Church	4	Diphtheria	3
Kent, Concession, Elgin	3	Typhoid fever	1
Area including land immediately adjoining north and south side of aqueduct containing intake water service pipe from aqueduct entrance to pumphouse.		Refuse and other filth.	7
	922		377

TABLE IV.

Showing streets and number of places inspected as registered from November 1, 1899, to October 31, 1900.

Albert	24	Canal	2	Lewis	2	Queen St. W	72
Argyle	1	Division	81	Langevin	1	Rideau	25
Alexander	1	Dalhousie	16	Lorne Ave	59	Rochester	78
Anglesea Sq	1	Daly Ave	17	Lett	2	Russell Ave	4
Archibald	4	Duke	6	McKay	1	Rose	4
Alice	1	Dufferin	3	McGee	2	Redpath	8
Anderson	3	Elgin	5	McLeod	13	Raymond	2
Arthur	3	Eccles	10	McTaggart	1	Sherwood	73
Augusta	6	Elm	41	MacLaren	20	Sussex	13
Avon Lane	1	Ellen	3	Maple	44	Sweetland	13
Adelaide	1	Emily	1	Murray	22	St Patrick	28
Bank	53	Elizabeth	3	Mary	52	Slater	18
Bay	13	Friel	8	Metcalfe	7	St. Andrew	18
Boteler	3	Fourth Ave	10	Margaret	2	Stanley	15
Bridge	43	Florence	15	Maria	28	Sparks	15
Balsam	1	Flora	5	Middle	24	Somerset	85
Baird	2	Frank	3	Mutchmor	4	Stewart	8
Besserer	11	First	12	Marlborough	1	St. Joseph	2
Bell	10	Gloucester	19	Martineau	3	Spruce	53
Bolton	3	Gilmour	11	McKenzie	4	2nd Ave	16
Britannia	1	George	7	Nepean	19	Sidney	1
Broad	1	Gladstone Ave	6	Notre Dame	3	Theodore	6
Clarence	25	Goulbourne	2	Nicholas	18	Torney	1
Concession	11	Heney	1	Nelson	22	Third Ave	14
Cooper	22	Henderson	9	Ottawa	38	Turner	2
College Ave	6	Hill	1	O'Connor	12	Tackaberry	3
Cathcart	3	Isabella	5	Oregon	3	Union	2
Cartier	5	Idol Lane	1	Osgoode	1	Vittoria	4
Creighton	8	James	9	Preston	113	Victoria	21
Charles	1	John	3	Primrose	1	Water	42
Carling Ave	1	King	29	Papineau	1	Wellington	24
Cyrville	1	Kent	16	Perkins	13	Wilbrod	9
Church	12	Keefer	2	Percy	4	Waverly	6
Cumberland	13	Lisgar	18	Panila	1	Waller	4
Cambridge	14	LeBreton	9	Poplar	19	Williams	10
Catherine	1	Lochiel	1	Pinard	1	Willow	21
Centre	1	Lyon	5	Patterson	4	York	8
Chapel	15	Lloyd	49	Queen	12	Young	1
Cobourg	1	Louisa	1				

ST. CATHARINES.

Report of the Chairman of Local Board of Health.

By E. Goodman, M. D.

To the Mayor and Council of the Corporation of the City of St. Catharines:

Gentlemen,—In accordance with the requirements of the Public Health Act I have the honor to submit my report of the sanitary condition of the city for the year ending on the 15th day of November, A.D. 1900.

With the exception of a few sporadic cases of typhoid and typo-malarial fever, due to local causes, which have been developed within the last two or three months, the city is in an excellent sanitary condition. no scarlatina, diphtheria, measles, whooping cough or other zymotic contagious disease having been reported for several weeks. It would materially aid the Board in stamping out typhoid fever if physicians in charge of such cases would report on the probable cause of the attacks, stating whether in their opinion they were due to tainted and impure water or milk, or to sewer gases entering the houses in consequence of defective plumbing, or from cess-pools or foul privy vaults. From time to time attention has been called to the disgusting and unsanitary practice of expectorating in public vehicles, on the sidewalks near the precincts of the Opera House, the Post Office and other places of general popular resort. A by-law making it a punishable offence would soon put an end to this objectionable habit, which is looked upon as conducive to the spread of tuberculosis, owing to the diffusion in the atmosphere of the dried sputa containing the germs of that dread disease.

Complaints have been made to the Board of Health concerning the offensive odors arising from the decomposition of the refuse matters of the several canning factories doing business within the city limits. The Sanitary Inspector states that the managers of these canneries have taken steps to have the refuse removed from their premises every day as rapidly as it accumulates, but the parties who cart it away for fertilizing purposes too often delay to have it covered soon enough with earth and leave the fermenting masses to taint the atmosphere The persons so offending have been warned by the Inspector in every case to abate the nuisance forthwith, and he informs me that in the majority of instances they have complied with his instructions.

Since my report was submitted to your honorable body last year the sewerage system of the city has been considerably extended, especially north of Welland Avenue, and I take pleasure in calling attention to the successful working of the automatic flush tanks, of which eleven in number have been installed in the following localities:

1. Geneva St. near St. Paul St.
2. Court St. at Centre St.
3. King St. near Court St.
4. James St. near Court House.
5. Church St. between Queen and Wellington Sts.
6. Queen St. near Church St.
7. Queen St. near St. Paul St.
8. Midland St. near North William St.
9. Ontario St. near Adams St.
10. Ontario St. near St Paul St.
11. Mary St. between St. Paul St. and King St.

A contract has been entered into with the Miller Automatic Flush Tank Co. to instal one more tank this year at the Junction of George and Louisa Sts. These tanks should be examined at least once every three months to remove any earth or rubbish that may collect within them and they should be treated whenever needed with a white wash or dressing of Portland cement, to preserve their impermeability and prevent the leakage of their contents.

The acting secretary, his assistant and the sanitary inspector have discharged their respective duties in a satisfactory manner and their reports are herewith submitted.

It will be observed that the number of deaths which have occurred in the city, from all causes, amounts to 175 for the year ending the 15th November, 1900. Deducting

from this number the deaths from old age, premature births, accidents and suicide, 31 in all, I find the rate of mortality, calculated upon a basis of population of 10,400 to be 13.8 for each 1000 of the inhabitants, which is a very satisfactory showing, and speaks well for the sanitary condition of the city.

To the Chairman and Members of the Local Board of Health of the City of St. Catharines.

GENTLEMEN :—Herewith I have the honor to submit the annual Statement of the number of deaths in the City of St. Catharines, from November 15th, 1899, to November 15th, 1900, and the causes thereof, also statement of the number of contagious diseases for the same period as per medical returns.

Deaths.

DISEASE.	No.	DISEASE.	No.
Cancer	6	Mania (senile)	1
Pneumonia	12	Sudden death	1
Consumption	18	Uremia	1
Typhoid fever	5	Nephritis	2
Scarlet fever	1	Drowned	6

Deaths.

DISEASE.	No.	DISEASE.	No.
Liver disease	2	Apoplexy	4
Shock from injury	1	Congenital weakness	1
Anæmia	1	Cerebral Hemmorrhage	2
Dropsy	1	Old age	5
Locomotor Ataxia	2	Goitre	1
Meningitis	2	Brain disease	4
Gangrene	2	Inflammation of kidneys	1
Paralysis	3	Bronchitis	5
Bright's disease	2	Disease of Larynx	2
Inanition	1	Obstruction of bowels	3
Measles	1	Malnutrition	2
Scrofula	1	Accident	5
Rheumatism	1	Inflammation of lungs	1
Cystitis	1	Erysipelas	1
Diarrhoea	1	Hepatitis	1
Peritonitis	1	Indigestion	1
Diabetes	1	Heat prostration	1
Marasmus	1	Cholera infantum	6
Dysentry	1	Spinal Bifida	1
Senility	4	Potts disease of spine	1
Enteritis	3	Enteric fever	1
Heart disease	19	Inflammation of bowels	2
Still born	8	Hemorrhage of lungs	1
Convulsions	8	Suicide by hanging	1
Total			175

Contagious Diseases.

REPORTED.	No.	DEATHS.	No.
Scarlet fever	20	Diphtheria	1
Diphtheria	4	Scarlet fever	1
Measles	126	Typhoid fever	5
		Consumption	18
		Measles	1
Total	150	Total	26

I have the honor to be,

Your obedient servant,

W. A. MITTLEBUGN,
Acting Secretary.

St. Catharines, Nov. 16th, 1900.

Report of Sanitary Inspector.

To the Chairman and Members of the Local Board of Health of the City of St. Catharines:

Gentlemen:—I have the honor to submit my annual report, as Sanitary Inspector to your honorable Board for the year ending 15th November, 1900, and say;

I have frequently visited the cow bryes, slaughter houses, livery and hotel stables, canning and other factories within the city, when necessary and have generally found them in a sanitary condition.

I have regularly tested the milk from the milk vendors and the register has been, not any below 90.

The streets, lanes and yards have received my strict attention, and the city scavengers have removed about 900 barrels of night soil during the year.

I have made weekly visits to the city's Isolated Hospital, it is in good order, and in case it should be required, it could be got ready in a short time.

I have made 875 house to house visits, placarded 141 houses for contagious diseases and fumigated 10 houses where contagious diseases had existed, also fumigated all the Public Schools, Collegiate Institute and the Free Library.

The city sewers have been flushed by means of the Automatic Flush Tanks, which have been placed on the various streets of the city and recently inspected and tested, and the same found to be in good working order.

Respectfully submitted,

A. Boulden,
Sanitary Inspector.

St. Catharines, Nov. 16th, 1900.

STRATFORD.

Report of the Medical Health Officer.

By J. A. Robertson, M.D.,

To the Chairman and Members of the Local Board of Health, Stratford:

Gentlemen,—In presenting my annual report as Medical Health Officer on the sanitary condition of the city for the past year I have pleasure in again congratulating you, taking it on the whole, on its healthy state during that time. By the Sanitary Inspector's report you will see that there has been an increase in the number of scarlet fever cases for the year as compared with that of former years. This, in a measure, was due to the mildness of the disease. In some instances it was found that no physician was employed and the children who had been affected, as well as others residing in the house, were allowed to mix with other children at school, thereby spreading the disease. Difficulty was also experienced in persuading the parents that the same care was necessary to be observed in mild cases as in severe ones, to prevent its spread, as the popular belief seems to be that the very mild cases are only "Scarlatina" and not scarlet fever, whereas it is one and the same poison being only different in degree. Contrasting this year with the two previous ones, we find there were 63 cases of scarlet fever with 3 deaths, in 1899 there were 20 cases with no deaths and in 1898 there were 17 cases with 1 death. During last year there were 7 cases of diphtheria with 1 death, in 1899 there were 4 cases with no deaths and in 1898 there were 32 cases with 4 deaths. This year there were 48 cases of typhoid fever reported with 1 death. During 1899 there were 40 cases with 2 deaths and in 1898 there were 18 cases with 2 deaths. Some difficulty is experienced in securing the number of cases of typhoid as the physicians of the city have not been in the habit of reporting promptly, due apparently to the fact of their not being supplied with proper cards for the notification of the disease. I would ask your Board to have same supplied to the different physicians of the city so that prompt attention can be given to the water supply used by parties contracting the disease, after notification is given by the attending physician.

I have pleasure in stating that the physicians of the city, as a rule, promptly report any contagious disease coming under their notice.

The number of cases of contagious diseases during the year impresses us with the necessity of having an Isolation hospital in which such cases could be treated. A number of cases, to my knowledge, desired to have the patients sent to the General Hospital and were disappointed to learn that on account of the disease being contagious, they could not be admitted. For over ten years I have almost annually urged upon your Board the desirability of having such an institution for the city and again urge upon you to ask the council to try to formulate some scheme whereby the object can be accomplished.

I am pleased to know that W.H.A. have taken the matter up, for with their usual activity, the co-operation of the citizens in general and the assistance of the Council, the securing of the hospital is close at hand.

The entire mortality in the city is somewhat the same as that of previous years. During the year there were 89 deaths from all causes reported. In 1899 there were 86 and in 1898, 89 the same as in the present year. This year 14 have been reported as having died from old age, 12 in 1899 and 9 in 1898 from the same cause. Consumption carried off 10 victims during the year, a decrease of 12 from the year previous, and 3 from that of 1898.

We have reason to congratulate ourselves on this remarkable decrease in the city, as compared with that of the Province as a whole. It is pleasing to note that the public at large are becoming alive to the fact, that consumption is contagious, and that strict measures are being observed to prevent its spread ; and "Sanatoria" are being established throughout the province in which patients so affected, particularly the poor can be more successfully treated and the danger to the public of communication thereby diminished.

I have pleasure in stating that steady progress is being made in the laying of sewers and the pollution of the streams running through the city greatly diminished by having proper connections made with the sewers. The sewage disposal has received considerable attention during the year and the committee deserve credit for their untiring and difficult task to secure its satisfactory completion. Steady and satisfactory progress is being made and before long the question of the pollution of the Avon by the sewage of the city will be a thing of the past.

Inspection, as usual, of the dairies supplying milk to the city was made and everything found satisfactory. The well-water where contagious diseases existed was examined and every means possible to further the sanitary condition of the city were adopted.

WINDSOR.

Report of Medical Health Officer.

By J. Coventry, M. D.

To the Chairman and Members of the Windsor Board of Health:

Gentlemen :—We have passed through another year of fairly good health, very few contagious diseases, and where they did occur, the form was generally mild. There were fewer infantile summer diseases than usual, and the death rate was low. There has been a greater number of typhoid and enteric fevers than usual, but not more than an average in other cities of Ontario.

In order to ascertain the consensus of opinion among the Medical profession as to the producing causes of these diseases, I addressed a circular to each physician, but I regret to say that only five out of fifteen replied to my note. From such meagre information I can draw no deductions, but submit, as my own opinion, that local unsanitary conditions on the premises where these diseases occurred, are more likely to have acted as the producing cause than the water, milk or food supplies.

As usual, tuberculosis continues to claim the greatest number of victims, 16 in number, but on account of the gradual invasion of the disease, neither the profession nor the public fully appreciate the peril to mankind, and the disease creeps stealthily into the household, and claims the fairest flowers of the flock for its victims.

In handling small pox last year, we were brought face to face with our incapacity to cope with a general outbreak. The city having purchased the grounds where the Hospital stood, the Board of Health removed the building to a higher location and added a suitable bath room, two disinfecting chambers, also a convenient place for the ambulance and other out-buildings. The furnace was old, leaking and inadequate to heat the building, so a new one was procured and a sufficient amount of radiating pipe put in to keep every part of the building warm in the coldest weather. The Hospital is now in a position to receive twenty patients or more, and no one can reasonably object to the accommodations. As the old ambulance is unfit for use, it is very desirable that a new one be procured.

An effort was made last spring to secure general vaccination by the appointment of public vaccinators in each ward, but it resulted in complete failure, owing partly to the apathy of the public, partly to the inconvenient places selected to do the work in, and partly to the inadequate remuneration fixed by the Statute. With the existence of small-pox in Michigan, where in many municipalities it is not even quarantined, Windsor will be very fortunate indeed, if it escapes the disease. As vaccination is the recognized preventative, some changes in the By-law should be made in order to secure practical results.

In previous years, a general collection of garbage was made every spring, and, in fact, this year an attempt was made to collect it twice a week, but the effort was far from being satisfactory. In the first place, the contractor undertook the work at such a ridiculously low figure, that he could not afford to do it according to specifications. But this was only partly the cause of failure. The public has been so long accustomed to throw every thing they had no use for into the alleys, that, although they were notified by circular not to do so, they continued to pile up tin cans, old barrels, horse manure, branches of trees, house garbage and grass cuttings, so that the man who had contracted to remove the garbage only, could not clean up as he went along. Both the Board of Works and the Police were appealed to for assistance in order to prevent this state of affairs, but no help was received from either of these Boards. Unless a city ordinance is passed, requiring every householder to keep a proper receptacle for garbage in a convenient place on his premises for the scavenger to get at, no systematic removal of garbage can be effected.

During the past month, the water supplied to the citizens has been very muddy, but it may be said to be " clean dirt, " and is largely due to the fact that United States' dredges have been widening the channel off Grosse Pointe, and the dumping scows have been depositing the clay towards the Canadian shore. High winds, particularly from the west, have stirred up the mud from the shallow waters, and the soil is of such a nature that it does not precipitate again till it reaches Lake Erie. The danger from drinking this water is not nearly so great as though the pollution was the result of shore contaminations.

A greater amount of improvement in house drainage and plumbing has been accomplished this year than in any two previous years ; the work of abolishing privy vaults has had a good beginning, and all new construction has been closely inspected.

The Inspector's report on this subject will speak for itself ; and the secretary will give the record of contagious diseases and the mortality list.

Windsor, Dec. 26th, 1900.

WINDSOR, Dec. 17th, 1900.

To the Chairman and Members of the Board of Health.

GENTLEMEN :—It has been the custom of your Secretary, in preparing his annual report to the Board, to traverse the whole field of sanitary work within the Municipality, conscious that, while so doing, he necessarily seemed to infringe upon the domain of the Medical Health Officer, the result sometimes being that the respective reports were largely devoted to the same identical matters.

This year an understanding was arrived at under which the Medical Health Officer will deal with all purely sanitary questions, leaving to me only the compilation of the statistics relating to deaths and their causes, as reported to this office during the year, and of the contagious diseases occuring within the same period.

Statements under these headings you will therefore please find attached hereto.

Very respectfully submitted,

STEPHEN LUSTED,
Secretary.

Deaths and their Causes, 1900.

Apoplexy	5	Hæmorrhage	1
Asphyxia	2	Hip-joint	1
Abcess of ear and brain	1	Hydrocephalus	1
Atheroma	2	Hypertrophy of liver	1
Accident	1	Indigestion	1
Acute Anaemia	1	Injury	1
Bronchial Phthisis	1	Intussuseption of bowels	1
Bronchitis	3	Interstitial nephritis	1
Bronchial Pneumonia	1	Jaundice	1
Bright's disease	1	Lung abscess	1
Cancer	2	Lung fever	1
Cancer of stomach	1	Marasmus	8
Consumption	6	Malnutrition	3
Cerebral effusion	2	Meningitis	4
Cerebral exhaustion	1	Nephritis	2
Croup	2	Obstruction of bowels	1
Convulsions	2	Oedema of throat	1
Cephalhaematoma	1	Old age	6
Cirrhosis of liver	1	Ovaritis	1
Cholera infantum	7	Paralysis	10
Cerebro-spinal Meningitis	1	Pericarditis	1
Cholera Morbus	1	Peritonitis	2
Congestion of brain	1	Pernicious anaemia	3
Diabetes	3	Phthisis pulmonalis	4
Diarrhoea	1	Phthisis	2
Died at birth	1	Premature birth	3
Displaced kidney	1	Pulmonary tuberculosis	1
Drowning	2	Pneumonia	8
Dysentery	1	Senile atrophy of brain	1
Eclampsia	1	Softening of brain	1
Enteritis	1	Scarlet fever	2
Endo-and Pericarditis	1	Shock following operation	1
Epilepsy	1	Still-born	8
Erysipelas	4	Suicide	1
Fibroid Phthisis	1	Trismus nascentium	1
General Debility	2	Tuberculosis	1
Heart disease	11	Tubercular Meningitis	1
Hæmorrhage of bowels	1	Typho pneumonia	1
Uraemia	1	Typhoid fever	8
Uraemic coma	1	Undeveloped	1
Uraemic convulsions	1	Unknown	3
Uraemic poisoning	2		
Rate, 15.16 per 1000.		Total	184

Memo.

Deaths under 1 year	44	Deaths over 50 and under 60	14
Deaths over 1 year and under 5	13	Deaths over 60 and under 70	20
Deaths over 5 years and under 10	2	Deaths over 70 and under 80	15
		Deaths over 80 and under 90	11
		Deaths over 90	4
Total	59	Total	64

Contagious Diseases.

Reported at the Health Office during the year 1900.

	Cases		
Scarlet fever	37	Typhoid fever	9
Diphtheria	4		
Scarletina	1	Total cases reported	52
Measles	1	No. of families afflicted	41
		No. of houses placarded	35

Notices of diseases have been reported in each case to the head teacher of the school or schools, as the case required, and also to the librarian of the city public library.

CITIES.

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Belleville	.....	Scarlatina, 4; diphtheria, 1; typhoid, 3; tuberculosis, 14.	Yes; yes.....	Yes	Yes	Yes .....
Brantford	Yes; yes.....	Diphtheria, 1; typhoid, 13; tuberculosis, 34.	Yes; no hospital	Yes	Yes	.....
Guelph.....	Yes; yes.....	Scarlatina, 2; diphtheria, 1; typhoid, 1; tuberculosis, 13.	Yes; yes	Yes; yes ..	Generally ..	No; no ...
Hamilton	Yes; yes.....	Diphtheria, 19; scarlatina, 6; typhoid, 11.	Yes; yes.....	.....	Yes	Yes .....
Kingston	Yes; yes.....	Scarlatina, 6; diphtheria, 1; typhoid, 3; tuberculosis, 37.	Yes; yes... ...	Yes	Yes	No .. ... .
London	Yes; yes.....	Tuberculosis, 60; typhoid, 9; diphtheria, 6; scarlatina, 6.	Yes; yes.....	.....	Yes	Yes .....
Ottawa.....	Yes; yes.....	Scarlatina, 10; diphtheria, 37; typhoid, 19; tuberculosis, 112.	Yes; yes.....	Yes; yes...	Yes	No; no ....
St. Catharines..	Yes; yes.....	Scarlatina, 1; diphtheria, 1; typhoid, 5; tuberculosis, 18.	Yes; yes.....	Yes; occasionally.	Yes	Sometimes .
St. Thomas.....	.....	Scarlatina, 2....	Yes.....	Yes; yes...	Yes	No; no ....
Stratford.....	Yes; yes.....	Scarlatina, 3; diphtheria, 1; typhoid, 1; tuberculosis, 10.	Yes; no	Yes; yes...	Yes	Yes .....
Toronto	Yes; yes.....	Scarlatina, 23; diphtheria, 144; typhoid, 24.	Yes; yes.....	.....	Yes	Yes; yes...
Windsor	Yes; yes.....	Tuberculosis, 16.	Yes; yes.....	.....	Yes	Yes .....

CITIES.

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act. How licensed and regulated.
Yes	Waterworks and wells.	No	None in city	Yes	Yes	None.
Yes	Yes; one-third used from wells 8 to 10 ft.	Yes	Yes	Yes	Yes	
Verbal notice.	Waterworks	No	No; in good condition.	Yes	No	Storing hides, etc.
Yes	Yes		None in city	Yes	Yes	None.
Yes	Yes	Yes; no	One not licensed. No inspection.	Yes	Yes	Slaughtering animals; storing hides, etc.
Yes	Waterworks	Yes		Yes	Yes	None.
Yes	Yes	Yes; tuberculin test compulsory for all milk vendors.	No; offal fed to hogs.	Yes	Yes	Hide inspection; soap boiling, etc.
To teachers.	Yes	Yes; no	No; all meats are inspected.	Yes	Yes	Tanneries soap factory; hide-house.
No	Yes	No	Yes; offal removed from city.	Voluntarily removed.	Yes	Pork packing houses, hide storehouse, soap mfg., etc.
Yes	Wells, soft	Yes; no	No; used as fertilizer; no.	Yes	Yes	Gas plant, slaughter houses, etc.
	Waterworks	Yes; no	No; removed daily; yes.	Yes	Yes	
Yes	Yes		None	Yes	Yes	None.

TOWNS AND VILLAGES.

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint.	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board.	Does the Board make inspection of public schools? Are new school children vaccinated.
Acton	Yes; yes		No	No	No	No
Alvinston	On complaint.	Diphtheria, 1	Yes; no	Not often required.	Yes	No
Alexandria	On complaint.	Diphtheria, 1	Yes; no	Sometimes used; good results.	No	No
Alliston	Yes; yes	Tuberculosis, 1.	Yes	Yes	Yes	No
Ailsa Craig	Yes; yes	Tuberculosis, 2.	No	No	No	No; no
Arkona	Once a year	Tuberculosis, 2.	Yes; no	Yes	Yes	Yes; no
Aylmer	Yes; yes		Yes; yes	No	Yes	Yes; no
Barrie	Yes; yes	Typhoid, 1; tuberculosis 6.	Yes; no	No	Yes	Yes; no
Brampton	Yes; yes	Tuberculosis, 6.	Yes; no	Yes	Yes	Yes; yes
Bowmanville	Yes; yes	Diphtheria, 2; tuberculosis, 7.	Yes; no	Yes; results good.	Yes	Yes
Brockville	General	Scarlatina, 1; typhoid, 3; tuberculosis, 17.	Yes, at both hospitals.	Yes; fairly satisfactory.	Yes	Yes; no
Bothwell	Yes; yes	Tuberculosis, 1.	Yes; no hospital.	Yes; yes	Yes	No; no
Bath	Yes		Yes; no hospital.	Yes; yes	Yes	No
Bayfield	When complaint is made	Tuberculosis, 1.	Yes.	No cases	No	No; no
Beeton	Yes; yes		Yes; no hospital.	Yes; yes	Yes	No; no
Beaverton	Yes; yes		Yes; no hospital.	Yes	Yes	No
Bolton	On complaint.		Yes	Yes; yes	Yes	No
Belle River	On complaint.		No; no	Yes; yes	Yes	No
Beamsville	General and on complaint	None	No	No	Not necessary.	No
Berlin	General and on complaint	Scarlatina, 7; typhoid, 6; tuberculosis, 6.	Yes; yes	Yes; yes	Yes	No; no
Brighton	Occasionally	Tuberculosis, 2.	Yes	No	Yes	Yes
Brussels	Yes; yes		Yes	No	Yes	Yes

TOWNS AND VILLAGES.

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply. If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72, Public Health Act. How licens'd and regulated.
No	No; wells, 12 to 40 ft.	No	None	No	No	None.
No	Wells	No	None	No; only partial.	No	None.
No	Water used is from streams.	No; no	None	No	No	None.
Yes	Wells, 20 ft	No	None	No	No	None.
No	Wells, 6 to 20 ft.	No	None	Yes	No	None.
No	Wells, 20 ft	No dairies	None	No	No	None.
Yes	Wells, 10 to 20 ft	No; no	None	Yes	No	None.
Yes	Water works; from Artesian wells.	Yes; no tuberculosis.	No; offal boiled; no systematic inspection of carcasses.	Yes	Yes	None.
Yes	Wells, 10 to 35 ft	Yes; no	Yes; boiling and feeding; no.	No	No	Butchers, and gas Co.
Yes	Wells, 30 ft	Yes; no cases	Yes; for fertilizing purposes; no inspection.	Yes	No	None.
Yes	From St. Lawrence River.	Yes; yes, one	None; carcasses inspected by veterinary.	Yes	Yes	Glass works; tannery, gas works.
No	Wells, 12 to 15 ft	No	None	No	No	None.
No	From bay and wells.	No	No; offal fed to hogs.	Yes	No	None.
No	Wells	No; no	No; no	No	No	None.
Yes	Waterworks	No; no	No; buried; no	Yes	No	None.
No	Wells. 15 ft	None in village	No; buried; yes.	Yes	No	None.
	Wells, 12 to 30 ft	No	No; boiled, fed to pigs.	No	Yes	None.
No	Wells, 10 ft	No	Yes; fed to hogs; no.	No	No	None.
Yes	Waterworks	No	None	No	No	None.
Yes	Waterworks	No; no; no	Yes; as fertilizer; yes.	Yes	Yes	None.
Yes	Wells, 12 to 18 ft	No	Two; no	No	No	None.
Yes	Wells, 12 to 30 ft	No; no	None	No	No	None.

TOWNS AND VILLAGES,—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint.	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board.	Does the Board make inspection of public schools? Are new school children vaccinated?
Bracebridge	General	Diphtheria, 2; typhoid, 1; tuberculosis, 3.	Yes; no.....	No	Yes	No; no ....
Collingwood	Yes	Typhoid, 2	Yes; isolation hospital.	Used when necessary.	Yes	No; no....
Clinton	Yes; yes.....	Diphtheria, 2 ..	Yes; no hospital	Used in some cases with negative results.	Yes	No .....
Creemore	Yes; yes.....	....	Yes	Don't know.	Yes	No .....
Clifford	.....	Tuberculosis, 1 .	No; no.....	No cases ...	No	No; no ....
Colborne.....	Yes: yes	.....	Yes; no.....	No	Yes	No; no ....
Caledonia	On complaint.	.. ..	Yes; no	Yes	Yes	No; no ....
Cardinal	Yes; yes.....	Diphtheria, 2 ..	Yes; no.....	Yes	Yes	Yes: no....
Chippawa	General	Tuberculosis, 1 .	Yes	No cases ...	Yes	No ....
Cobourg.....	Yes; yes.....	Diphtheria, 2; tuberculosis, 4.	Yes; no.....	Yes; yes...	Yes	No; no ....
Dresden.....	Yes; yes; no.	Typhoid 1; tuberculosis 3.	Yes; no.....	Yes; yes...	Yes	Yes; yes...
Delhi	Yes; yes	Tuberculosis, 1..	Yes	Yes; yes...	Yes	Yes; no....
Dundalk	Yes; yearly..	.....	Yes; no.....	No	No	Yearly; no.
Durham.....	On complaint.	.....	No	No	No	No .....
Dunnville . .	Yes; yes	Tuberculosis, 3..	Yes; no.....	Yes; yes...	Yes	No; no ....
Embro	Yes; yes.....	Tuberculosis, 2..	Yes; no.....	No cases ...	Yes	Yes; no....
Erin	Regular inspection.	None.....	Yes; no.....	No cases ..	No cases ...	No . .....
Elora	Yes; yes.....	Tuberculosis, 1.	No hospital.....	No cases ...	No	No; no ....
Forest	Yes; yes.....	Typhoid, 1.	Yes; no..... .	Yes; yes...	Yes	Yes; no....
Galt	Yes; yes.....	Typhoid, 6; tuberculosis, 21.	Yes; no.....	Yes; yes...	Yes	Yes; no....
Grand Valley ..	Yes; yearly..	Typhoid, 1	Yes; no.....	Yes, when necessary.	Not always.	No; no ....
Gravenhurst....	Yes; general.	Diphtheria, 1; tuberculosis, 2.	Yes; no.....	Yes; yes...	Yes	No; no ....
Gore Bay	No	Typhoid, 1; tuberculosis, 2.	No	Don't know.	No	No .....

TOWNS AND VILLAGES.—*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells, give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72 Public Health Act. How licens'd and regulated.
Yes	Waterworks ...	No ; no	Yes; fed to hogs; no.	Yes	No	None.
No	Georgian Bay ..	No ; no	No ; fed to pigs ; no.	Yes	No	None.
Yes	Wells, 40 to 250 ft.	No; cases of tuberculosis have occurred.	None	Yes	No	None.
Yes	Wells, 8 to 14 ft.	No ; no	No	No	No	None.
Yes	Wells, 20 to 40 ft	No ; no	Not licensed....	No	No	None.
Yes	Wells, 12 ft	No ; no	No	Partial	No	None.
No	Well, 18 ft	None	No; fed to hogs; no.	No	No	None.
No	St. Lawrence River.	No	No	No	No	None.
No	Wells, 14 to 20 ft	No	None	No	No	None.
Yes . . .	Waterworks ...	Yes ; no cases ; no test.	Yes; offal buried or fed to hogs ; no.	Yes	Partial	One.
Yes	Wells, 20 feet..	No ; no ; no.....	None	Partial	No	None.
No	Artesian wells, 16 to 35 feet.	No ; no	None	No	No	None.
Yes	Wells	No	None	No	No	None.
No	Wells, 40 feet...	No ; no	None	Partial	No	None.
Yes	Yes ; some wells, 8 to 20 feet.	No ; no	None	No; partial.	No	None.
Yes	Wells, 20 to 30 feet.	No ; no	No ; buried ; no.	Yes	No	None.
Yes	Wells, 20 feet...	No	No	No	No	None.
No	Wells, 6 to 8 feet	No ; no ; no.....	No ; no ; no....	No	No	None.
No	Wells, 15 to 30 feet.	Yes	Yes ; burnt ; no.	Yes	Partial	None.
Yes	Yes; some wells.	Yes ; no.....	None; yes; boiled,fed to hogs.	Yes	Only partial	None.
Yes	Artesian well, 100 feet.	No ; no	No ; fed to hogs; no.	No	No	None.
Yes	Wells, 25 feet...	No ; no	None	No	No	None.
No	Yes	No	No	No	No	None.

TOWNS AND VILLAGES.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint.	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Hanover	Yes; yes	Diphtheria 3; typhoid 1; tuberculosis 1.	Yes; no	Yes; yes	Yes	No
Holland Landing	Yes; yes		Yes; no	Yes; yes	Yes	Yes; yes
Hagersville	Yes; yes		No; no hospital.	Yes; yes	Yes	Yes; yes
Hensall	Yes; yearly		No cases	Yes; none this year.	No	Yes; yes
Havelock	Yes; yes	None	No occasion	No occasion	Yes	Yes; no
Hespeler	Yes; yes	Typhoid, 2; tuberculosis, 6	Yes; no	Yes; yes	Yes	Yes; no
Kingsville	Yes; yes	Tuberculosis, 1.	Yes; no	Yes; yes	Yes	Yes
Kincardine	General inspection.	Tuberculosis, 1.	Yes; no	Yes; yes	Yes	No
Lindsay		Scarlatina, 1; diphtheria, 2; typhoid, 2.	Yes; yes	Yes; yes	Yes	No; no
Lakefield	Spring & fall.	Tuberculosis, 4.	Yes; yes	No diphtheria.	Yes, by M. H. O.	No
Leamington	General inspection.		No; no	When necessary.	Yes; yes	Yes
Lancaster	On complaint.	Tuberculosis, 1.	Yes	No	Yes	No
Little Current	Yes	Typhoid, 6	Yes; no	No cases	No	No
Madoc	Yes; yes	Tuberculosis, 2.	Yes; no	Yes	Yes	Yes; no
Millbrook	Once annually		House placarded.	Yes; yes	Yes	No
Morrisburg	Once yearly	Typhoid, 1; tuberculosis, 1.	Yes, except typhoid and tuberculosis.		Yes	
Milton	Annual inspection.	Typhoid, 1; tuberculosis, 1.	When necessary.	Yes; yes	No	No
Mount Forest	General inspection.	Tuberculosis, 1.	Yes; no		No	No
Merrickville	Once a year		Yes; no	Don't know.	No	No
Newmarket	Yes; yes		Yes; no			
Newboro	General		No hospital			Yes; no
North Toronto	Annual inspection.	Diphtheria, 1; typhoid, 1; tuberculosis, 3.	Yes; no	No	Yes	No
Napanee	Yes; yes		Yes; no	Yes	Yes	No; no
Newcastle	Yes; yes	Diphtheria, 2.	By placarding.	No	Yes	Yes

TOWNS AND VILLAGES.—*Continued.*

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No, and kind of noxious trades. See sec. 72, Public Health Act. How licensed and regulated.
Yes	Wells, 204 feet..	None	No; no inspection of carcasses.	No	No	None.
Yes	Wells, 20 to 40 feet.	Yes; no; yes....	None	No.....	No	None.
Yes	Wells, 35 feet...	No; no	Yes; no.....	Yes	No	None.
No	Wells, 20 feet...	No dairy cows....	No; no	No	No	None.
No	Wells, 20 feet...	No; no	No	No	No	None.
Yes	Wells, 25 feet...	No; no	None	Yes	No	None.
No	Yes	No; no cases	None	No	No	None.
Yes	Waterworks ...	No; no	No; offal burned or buried; no.	No	No	Slaughtering of hogs.
Yes	Waterworks and wells.	No	None	No	Yes	None.
Yes	River and wells.	No	None	Yes	No	None.
.....	Waterworks ...	No	No	Yes	No	None.
No	Wells, 12 to 18 feet.	No	Yes	No	No	None.
Yes	From lake and wells.	No	None	Yes	No	None.
No	Wells	No	No	Yes	No	None.
No	Wells & springs.	No; no	None	No.....	No	None.
Yes.....	Waterworks	.....	None	Yes	No	None.
Yes.....	Waterworks	No; no	None	Yes.....	No	None.
Yes.....	Waterworks	No	No.....	No system..	No	None.
No	Wells	No	No.....	No	No	None.
.....	.....	No	None	No	No	None.
.....	Wells, 20 to 40 ft.	No	None	No	No	None.
Yes.....	Waterworks and wells.	No; no	Yes; no inspection of carcasses.	Yes.....	No	None.
Yes.....	Wells, 15 to 20 ft.	Yes; no test used.	Yes; no	No	No	None.
No	Wells, 10 feet ..	No; no	No.....	No	No	None.

TOWNS AND VILLAGES.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Niagara Falls ..	Yes ; yes. ...	Diphtheria 1 ; tuberculosis, 4.	Yes ; no	Yes	Yes	No ; no ....
Niagara	Yes ; yes.....	Tuberculosis, 1..	Yes	Yes ; yes...	Yes	No .....
Norwood	Yes ; yes.....	.....	Placarded ; no..	No cases....	Yes	No ; no ....
Norwich	General inspection.	Diphtheria, 1 ; typhoid, 1 ; tuberculosis, 2.	Yes ; no	Yes ; yes ..	Yes	No ; no ....
Ottawa East....	Yes	.....	.....	Yes	Yes	Yes ; no ...
Oakville.....	General	None.....	No	Yes	Yes	No .....
Owen Sound ...	Yes ; yes	Typhoid, 1.....	Yes	.....	Yes	Yes ; no ...
Orangeville.....	Yes ; yes	Diphtheria, 4...	Yes ; no	Yes ; yes ..	Yes	No ; yes ...
Oshawa	Yes , yes ..	Diphtheria, 1 ; typhoid, 7 ; tuberculosis 5 ;	Yes ; no.....	Yes	Yes	No ; no ....
Paris.....	Yes ; yes	Diphtheria, 2...	Yes ; no	Yes	Yes	Yes .....
Paisley.....	Yes ; yes	None.	No occasion	No	When required.	Yes ; no ...
Preston	Yes.....	None.....	Yes	....	Yes	.....
Pembroke	On complaint.	Diphtheria, 4 ; typhoid, 5 ; tuberculosis, 5 ;	Yes ; no	Yes ; yes ..	No	No ....
Petrolia	Yes ; yes	Scarlatina, 1 ; tuberculosis, 5 ;	Yes	Yes ; yes ..	Yes	Yes ; no....
Parkhill.....	Yes ; repeated	Tuberculosis, 1 ;	Yes ; no	Yes ; yes ..	Yes	No ; no ....
Portsmouth	General inspection.	Tuberculosis, 1 ;	Yes ; yes.....	Yes.....	No	No ; no ....
Peterboro'	General inspection.	Typhoid, 4 ; Scarlatina, 2 ; diphtheria, 1 ; tuberculosis, 20;	Yes	Yes	Yes	.....
Port Stanley ...	General inspection.	None	Yes	No cases ...	Yes	No .....
Port Elgin	Yes ; yes	Diphtheria; 1 ; typhoid, 1 ; tuberculosis, 2 ;	Yes ; no	No	Yes	No ; no ....
Port Dalhousie .	Yes ; yes	.....	No diseases	No occasion to use it.	Yes	No .....
Port Perry	Yes ; yes	Typhoid, 2 : tuberculosis, 1 ;	Yes ; no	Yes ; good .	Yes	Yes ; no ...
Port Arthur....	Yes	Smallpox, 3.....	Yes	.....	Yes	Yes .....
Port Carling....	Yes	Tuberculosis, 2 .	Yes ; no	.....	Yes	Yes ; no ...

TOWNS AND VILLAGES.—*Continued.*

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kinds of noxious trades. See sec. 72, Public Health Act. How licensed and regulated?
Yes	River and wells.	Yes	None	Yes	Yes	None.
No	Waterworks	No	No; no	No	Only partial.	None.
Yes	Wells, 20 feet	No dairy	None	No	No	None.
Yes	Wells, 12 to 40 ft.	Inspected last fall; no test.	No; but inspected.	Yes	No	Cider making.
No	Wells, 20 to 160 feet	Yes; no	Yes; offal buried; no.	Of night soil only.	No	None.
Yes	Wells, 20 feet	No	No; buried; no.	No	No	None.
		No	None	Yes	Yes	None.
Yes	Waterworks	No; no	None	Yes	No	None.
Yes	Wells, 15 to 25 feet.	None reported	No; fed to hogs; no.	No	No	None.
M.H.O. only	Wells & springs.	Yes; 10 cows out of 110 had tuberculosis were destroyed.	None	No	No	None.
No	Wells, 20 to 60 ft.	None kept	None	No	No	None.
		No	None	No	No	None.
No	Waterworks	No	None	No	Partial	None.
Yes	Waterworks	Yes, twice a year; no.	No; offal fed to hogs.	Yes	Partial	None.
Yes	Artesian wells	No	None	Yes	No	None.
No	Wells	No	None	Yes	No	None.
	Waterworks			Yes	Yes	None.
No	Wells, 12 to 18 feet.	No	Permits granted; offal fed to hogs; no.	No	No	None.
	Wells, 14 to 20 feet.	No	None	Yes	No	None.
No	Wells, 12 to 14 feet.	No	No; in good condition.	Yes	No	None.
Physicians only.	Wells, 18 feet	No	None	No	No	None.
Yes	Wells	No	None	No	No	None.
No	Spring water	No	Yes: yes	Yes	No	None.

TOWNS AND VILLAGES.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint.	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Pt. Colborne ...	On complaint.	Tuberculosis, 2 .	No	Yes; yes....	No	No .....
Ridgetown	On complaint.	Tuberculosis, 8 .	Sometimes	Cannot say..	Yes	Think so...
Renfrew	Once a year ..	.....	Yes; yes..	Yes	Not always..	No ; no ....
Stirling	No	....	Yes	Yes	Yes	No ; no ....
Strathroy	Yes; yes.....	.....	No	No	Yes	No .....
Southampton ..	General inspection.	.....	Yes ; no	Diphtheria is treated by latest improved methods.	Yes	Yes; no ....
Shelbourne	General inspection.	.....	No hospital ; no diseases.	Generally used.	No	Not this year
Streetsville	General inspection.	.....	Yes ; no hospital.	Yes; yes....	Yes	Yes . .....
Seaforth.... ..	No ; on complaint.	Tyhoid, 1 ; tuberculosis, 1	Yes ; no	Yes; yes....	No; only by doctor in attendance.	No .....
Sault Ste. Marie	Yes : twice a year.	Smallpox, 1 ; diphtheria, 2 ; typhoid, 11 ; tuberculosis, 2	Yes ; no.....	Yes; yes....	Yes	Yes .....
Sarnia.....	General and on complaint.	.....	Yes	Yes; yes....	No ; except smallpox.	No; yes ....
Springfield	At intervals ..	....	No; done as well as possible.	Yes	Yes	Yes . ..
Simcoe.....	Yes; yes.....	Typhoid, 1 ; tuberculosis, 5	Yes; yes...	Yes	Yes	Yes; yes....
Sutton	General	....	Yes; no	Yes	Yes	No; no .....
Stouffville	Once a year ..	Diphtheria, 2 ; typhoid, 1 ; tuberculosis, 3	Yes; no	Not in all cases.	Yes	No .....
Smith's Falls...	On complaint.	Tuberculosis, 4 .	Yes; no	Yes; yes....	Yes	Yes .....
Sturgeon Point .	Regular inspection.	None..... ..	No cases.....	No cases ...	No cases ...	No school...
Toronto Jct	Yes; yes.....	Diphtheria, 1 ; typhoid, 4 ; tuberculosis, 6	Yes; no	Yes; yes....	Yes	Yes; no ....
Thessalon	On complaint.	Diphtheria, 3 ; typhoid, 1 ; tuberculosis, 1	Yes; no	No	Yes	No; no .....
Thedford	Yes; yes	Diphtheria, 1...	Yes; no	No	Yes	Yes; yes....
Tweed	Yes; yes.....	Diphtheria, 1 ; tuberculosis, 2	Yes; no	Yes; yes....	Yes	No .....

TOWNS AND VILLAGES,—*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act. How licensed and regulated.
No	Waterworks.	No	No; no	No	No	None.
Yes	Wells	No; no	None	Yes.	No	None.
Yes	Waterworks.	Yes; no.	None	Yes; yes	Yes.	None.
	Wells	No	No; no	No	No	None.
Yes	Wells, 20 to 25 feet.	No	No	Yes.	No	None, except canning factory.
Yes	Wells, 8 to 25 feet.	No; no	No; offal buried; no.	No	No	Fish oil extracting.
No	Artesian wells	No	Yes; no; no...	No	No	One slaughter house.
Yes	Wells, 30 feet.	No; no cases..	Yes; fed to hogs; no.	Yes.	No	None.
No	Wells, 18 to 30 feet.	No	None	No	No	None.
No		No; none.	No; burnt; no.	Yes.	No	None.
Physicians only	Waterworks.	Yes; no cases.	None	Yes.	Yes.	None.
No	Wells	No	No	No	No	1 cheese factory; 2 slaughter houses.
Yes	Artesian wells.	No	None	No	No	None.
Yes	Wells, 15 feet.	No; no dairies	No	No	No	None.
Yes	Springs and wells.	No	No	No	No	No.
Generally	Wells	Yes; yes; test used.	None	Yes.	Yes.	None.
	Wells, 10 to 20 feet.	No cows in village	None	Yes.	No	None.
Yes	Wateworks and wells.	Inspection on complaint.	None	Yes.	Yes.	None.
No	Water from Lake Huron.	No; no	No; fed to hogs; no.	No	No	None.
No	Wells, 20 feet.	Yes; no	None	Yes.	No	None.
No	Wells, 12 feet.	No; no	Yes; buried; no.	Yes.	No	None.

TOWNS AND VILLAGES.—*Concluded.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria antitoxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Tiverton	On complaint.	Typhoid, 1; tuberculosis, 2	Yes; yes	No occasion.	Yes	No
Thamesville	On complaint.	Tuberculosis, 1	No	Yes; yes	No	No; no
Tottenham	On complaint.	None	Not needed	No cases	Not needed.	No; no
Tara	Sanitary inspection.	Tuberculosis, 1	No	No	Yes	No; no
Tilsonburg	Yes; yes	Typhoid, 2	No	No cases	Yes	No
Teeswater	Two inspect'ns each season.	Tuberculosis, 2	Yes; no	No cases	Yes	No; no
Tilbury	General inspection.	Typhoid, 1	Yes; no	Yes; yes	Yes	Yes
Trenton	Yes; yes		Yes; no	Yes; yes	Yes	Yes; no
Uxbridge	Yes	Typhoid, 1; tuberculosis, 1	Yes; no	Yes	Yes	No; no
Vienna	On complaint.	None	No	No	If necessary.	No
Walkerton	Yes; yes	Tuberculosis, 4	Yes; no	Yes; yes	Yes	Yes; no
Wiarton	Yes; yes; yes,		Yes; no	Yes; yes	Yes	Yes; no
Wroxeter	No	Tuberculosis, 1	No	No	No	No
Waterdown	On complaint.		Yes; no	No	No	No
Watford	Yes; inspected		Yes; no	Yes	Yes	Yes
Woodstock	Yes	Tuberculosis, 18; diphtheria, 2; typhoid, 5	Yes		Yes	Yes
Woodville	Yes	None	No	No	None	No
Waterford	On complaint.	Tuberculosis, 1	Yes	Yes	No	No
Walkerville	Yes		It is		Yes	Yes
Winchester	General inspection.	None	Yes	Yes; yes	Yes	No; no
Whitby	On complaint.	Tuberculosis, 2	Yes	No occasion.	Not required	No
Woodbridge	Yes	Tuberculosis, 1	Not required	Not required	Not required	Children vaccinated at home.
Wingham	On complaint.	Typhoid, 1; tuberculosis, 1	House placarded	No cases	No	No

TOWNS AND VILLAGES.—*Concluded.*

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act. How lincensed and regulated.
No	Wells, 12 to 40 feet.	No	No; fed to pigs.	No	None	None.
Yes	From gravel bed	No; no; no	None	Yes.	No	None.
No	Wells	No; no	No; no; no	No	No	None.
No	Wells, 18 to 30 feet.	No	Only one not licensed.	No	No	None.
Yes	Wells, 10 to 15 feet.	No; no	None.	Yes.	Yes.	None.
Yes.	Wells, 25 to 60 feet.	No; no cases	None.	Yes.	No	None.
Yes.	Wells, 14 feet.	No; no	None	Yes.	No	None.
Yes.	Waterworks	No dairies	None	Yes.	No	No.
No	Wells, 20 to 30 feet.	No	None	No	No	None.
Yes.	Wells, 16 to 18 feet.	No; no	None in use	No	No	None.
Yes.	From springs	Yes; no	Yes; cooked and fed to hogs.	Yes.	Yes.	None.
Yes.	Colpoy's Bay and wells.	Yes; no	None	Yes.	No	None.
No	Wells, 18 feet	No	None.	No	No	None.
No	Wells, 25 feet	No	None	No	No	None.
Yes.	Wells	No	None.	Yes.	Yes.	None.
Yes.						
No	Wells, 30 feet	No	None.	No	No	None.
No	Wells	No	None.	Yes.	No	None.
Yes.	Detroit River	Inspection of milk is made.	None	Yes.	Yes.	None.
Yes.	Wells	No dairy	None	Yes.	No	Yes.
Yes.	Wells, 16 to 20 feet.	No dairy	No; offal cooked no.	No	No	None.
Yes.	Wells, 30 feet	No dairy	No	Yes.	No	None.
Yes.	Wells, 30 feet	None	None	No	No	None.

TOWNSHIPS.

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated.
Alnwick	On complaint.	Tuberculosis, 3.	Yes	Yes	Yes	No; no
Artimesia	On complaint.	Tuberculosis, 1.	No	No.	No	No
Alfred	When complaint is made.	Diphtheria, 1; typhoid, 1; tuberculosis, 2.	Yes	Yes; yes	Yes	No; no
Ashfield	When Board is notified.	Diphtheria, 3; tuberculosis, 2.	Yes	Yes	Yes	No; no
Arran	Yes	Typhoid, 1; tuberculosis, 2.	Yes	Yes	Yes	Yes; no
Amherst Island.	No; no—only on complaint	None	Not required	No cases	No cases	No; no
Armour	Only on complaint.		Yes; no		Yes, by M. H.O.	No
Arthur	On complaint.	Typhoid, 1; tuberculosis, 1.	Yes; no	Yes; yes.	Yes, by physician.	Yes; no
Algona S	On complaint.	None	Yes	Yes; yes	Yes	No; no
Augusta	General inspection.			Do not know		No
Asphodel	On complaint.		Yes; no	No occasion	No	No; no
Adlaide	General inspection.		Yes; no	Yes; yes	No	No
Athol	Action on complaint.	None	No	Yes; yes	Yes	No; no
Albermarle	On complaint.		Yes	Yes	Yes	No: no
Amabel	Yes; yes	Typhoid, 3; tuberculosis, 4.	Yes	Yes; yes	Yes	Yes; no
Anderdon	On complaint.	Typhoid, 1; tuberculosis, 1.	No	Yes; yes	Yes	No
Ameliasburgh	Yes; yes		Yes	Yes	Yes	No
Blenheim	General inspection.	Scarlatina, 1; diphtheria, 1; typhoid, 1; tuberculosis, 1.	Isolated in their own homes.	Yes	In most cases.	Yes; no
Brock	Yes; yes		Yes; no hospital.	None reported.	No	Partially.
Bastard and Burgess.	No; no; yes.	None	No; isolated only when cases are reported to Board.	No	No	No; no
Belmont and Mathuen.	Only when complaint is made.	Tuberculosis, 2.	Yes in dwellings; no hospital.	Yes; satisfactory.	Yes	No; no

TOWNSHIPS.

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72. Public Health Act. How licens'd and regulated.
No	Wells, 20 feet	No; no	No; offal fed to hogs.	No	No	None.
Yes	Wells, 16 to 60 feet.	No	No	No	No	None.
No	Wells, about 15 feet.	No	No	No	No	None.
No	Wells	No	No	No	No	None.
Yes	Wells	No	No; offal is boiled and fed to hogs	From schools.	No	None.
No	Lake water	No; no	None	No	No	None.
No		No	No	No	No	None.
Yes	Wells, 15 to 20 feet.	No; no tuberculosis.	Don't know	No	No	None.
No	Wells, 16 feet	No; no	None	No	No	None.
No	Wells, 12 to 30 feet.	Do not know	No; inspected	No	No	None.
Yes	Wells, 15 to 25 feet.	No; no	None in township.	Rural district.	No	None.
No	Wells	Yes	Yes; no	No	No	None.
No	Wells, 20 feet	No; no	None	No	No	None.
No	Wells & springs.	No; no	None	No	No	None.
Yes	Wells, 18 feet	No	Yes	No	No	None.
No	Wells, 50 feet	No	None	No	No	None.
Yes	Wells	No	Yes	Yes	No	None.
Yes	No; wells, from 15 to 30 ft.	No; no cases this year.	No; fed to hogs.	No	No	None.
Yes	No; wells, 20 ft.	No; no tuberculosis.	No; offal is fed to hogs.	No	No	None.
No	No; wells, 10 ft.	No; yes; none used.	No	No	No	None.
Yes	No; wells, 10 to 25 ft.	No; none	None in tp	No	No	None.

TOWNSHIPS —*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out: Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Bedford	Action taken when complaint is made.	Tuberculosis, 1..	Yes	No occasion to use it.	Yes	No; no
Bosanquet	Yes; general inspection of cheese factories, etc.	Tuberculosis, 4..	Yes	Yes	Yes	Yes; no
Burgess, N.	No; no	None				No
Bexley	On complaint.	Typhoid, 1	Yes	Yes; successfully.	No, M.H.O. or attending physician disinfects.	No
Burford	Yes; cheese factories, slaughter houses, etc.	Tuberculosis, 6..	Yes	Yes; doubtful.	No	No; no
Bayfield	When complaint is made.	Diphtheria, 1...	Yes	Yes	Yes	No Board here.
Brooke	On complaint.	Tuberculosis, 3..	Yes	Cannot say.	Yes	No; no
Bathurst	On complaint.	Diphtheria, 1...	Yes; no	Yes; yes	No	No; no
Bertie	On complaint.	Typhoid, 1	No	Yes	Yes	No; no
Barton	On complaint.	Tuberculosis, 3..	Yes; no	Yes	No	No; no
Beverley	On complaint.		Yes; no	Yes; yes	Yes	No; no
Brant	Yes; yes		Yes; no	Yes; yes	Yes	No; no
Brantford	On complaint.	Typhoid, 1; tuberculosis, 4.	Yes; no	Yes	No	No; no
Blandford	No	Diphtheria, 1; Tuberculosis, 4	No	Yes	No	No; no
Brunel	On complaint.		Yes	Yes; yes	Yes	No; no
Brighton	On complaint.		Yes	Yes	Yes	Yes
Bentinck	Yes; no	Tuberculosis, 6	Yes	Yes; yes	Yes	No; no
Caister	Yes	Tuberculosis, 3..	Yes; placards, no hospital.	Yes; satisfactory.	No	No
Carrick	Yes; and when complaint is made.	Scarlatina, 1; diphtheria, 1; typhoid, 1; tuberculosis, 1.	Houses placarded; no hospital	Yes; satisfactory.	No; only by attending physician.	Yes; no,
Clarke	Yes; yes	Diphtheria, 1...	No, physicians attend to all cases; no hospital.	Not used	Yes	Yes; no
Cornwall	General inspection.	Small-pox, 1; diphtheria, 2.	Yes; no hospital	Yes; yes...	Yes	No; no

TOWNSHIPS.—*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act. How licensed and regulated.
No	No; wells, 8 ft.	No; no	None	No	No	None.
No	No; wells, 15 to 30 ft	No	No; fed to hogs.	No	No	None.
No	Wells, 22 ft	No	None in tp	No	No	None.
No	Wells, 20 ft	No; no	No; offal buried	No	No	None.
Yes; to M. H. O.	Wells & springs.	No; yes	Not licensed; offal fed to hogs.	No	No	None.
Yes	Wells, 25 to 50 ft	No	None	No	No	None.
No	Wells	No	No	No	No	None.
No		No	No	No	No	None.
Yes	Wells, 18 to 60 ft	No; no	No	No	No	None.
Yes	Wells	Yes	No	No	No	None.
Yes	Wells	No; no	No	No	No	None.
No	Wells	Yes	Yes; buried	No	No	None.
No	Wells, 25 ft	Yes; no	No; no	No	No	None.
M. H. O. only.	Wells, 15 ft	Not this year	No; inspected	No	No	None.
No	Spring water	No; no; no	None in tp	No	No	None.
	Wells	No		No	No	None.
Yes	Wells, 20 ft.	None in township.	No			
No	Wells and cisterns.	No; no	No; offal is cooked before feeding.	Yes	No	None.
No	Wells, 10 to 120 feet.	No; no	No; but kept in sanitary condition; no.	Yes	No	None.
Physicians only.	Wells & springs.	No; no	No; buried or fed to pigs.	House holders attend to this.	No	None.
Physicians only.		No; yes; yes	No; offal is buried; no inspection.	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year or is action taken only on complaint.	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory.	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Canboro	When complaint is made.	None	By placards only	Yes	Yes	No; no
Crowland	On complaint.	None reported	No occasion	Don't know.	No	No; no
Carlow	On complaint.	Tuberculosis	Yes	No	No	No
Chandos	When complaint is made.	None	No hospital		Yes	No
Charlotteville	Only on complaint.	Typhoid, 1; tuberculosis, 3.	Isolated in residence.	Yes; good results.	No	No
Caledonia	No; only on complaint.	Scarlatina, 1; diphtheria, 1.	House placarded; no hospital.	Yes; excellent results	Yes	No
Chaffey	On complaint.		Yes; no	None used this year.	Yes	No
Cumberland	On complaint.	Tuberculosis, 2.	No	Yes; yes	Yes	No; no
Cartwright	Yes; yes	Diphtheria, 2	Yes; no	Yes	Yes	No; no
Culross		Typhoid, 1; tuberculosis, 2.				
Caven	No; no; yes.	Diphtheria, 2; tuberculosis, 2	Yes; no	Yes; yes	Yes	No; no
Cambridge	On complaint.	Diphtheria, 1	Yes; no	Yes; yes	Yes	No
Caledon	On complaint.		Yes; no	No	Yes	No
Cardiff	On complaint.	Tuberculosis, 1.	Yes		Yes	No; no
Carnarvon	On complaint.		No	No	Yes	No; no
Cramahe	On complaint.	Scarlatina, 3; diphtheria, 4; typhoid, 1; tuberculosis, 1.	Yes	Yes; yes	No	No; no
Charlottenburgh	On complaint.	Diphtheria, 1; tuberculosis, 6.	Yes; no	Yes; yes	Yes	No; no
Clarence	Yes; yes	Diphtheria, 15; tuberculosis, 3.	Yes; no	Yes; yes	Yes	No; no
Cardwell	On complaint.	Diphtheria, 3; tuberculosis, 1.	Yes; no	No	Yes	No
Colborne	No; no; yes.		Yes; no	Yes	No	No; no
Caradoc	Yes	Tuberculosis, 1	Yes	Yes	Yes	No; no
Colchester, N	On complaint.	Typhoid, 1; tuberculosis, 3.	Yes; no	Yes; yes	No	No; no
Camden	On complaint.		Yes; no	Yes; yes	Yes	No; no
Carden	On complaint.		Yes; no	No	Yes	No
Darling	No; only when complaint is made.	Diphtheria, 1; tuberculosis, 1.	No; no hospital.	Yes; good results.	Yes	No; no

TOWNSHIPS.—*Continued*..

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberbulin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72 Public Health Act. How licens'd and regulated.
No	Wells	No	No; not inspected.	No	No	None.
No	Wells; about 23 ft.	No; no cases of tuberculosis.	No	No	No	None.
No	Wells, 15 to 40 ft	No	None in tp	No	No	None.
No	Mostly springs	No	None in tp	No	No	None.
Yes	Mostly wells	No	No; are inspected	No	No	None.
No		No; no cases reported.	None in corporation.	No	No	None.
No	Wells & springs.	No	Yes; fed to hogs; no.	No	No	None.
No	Wells, 10 to 20 ft	No; no	No	No	None	None.
No	Wells, 24 to 30 ft	No; no cases	None in tp	No	No	None.
	Wells, 20 ft		No	No	No	None.
Yes	Wells & springs, 30 ft.	No; no	No; boiled and fed to hogs.	No	No	None.
Yes	Wells, 25 ft.	No	No	No	No	None.
Yes	Wells	Yes	No	Yes	No	None.
No	Wells	No	None	No	No	None.
No	Wells, 30 ft	No	None	No	No	None
No	Springs	No	None	No	No	Non.
No	Wells, 30 ft	No	No	No	No	None.
No	Wells, 20 ft	No	No	No	No	None.
Yes	Springs	No	None	No	No	None.
No	Wells, 30 ft	No; no	None	No	No	None.
Yes	Wells, 30 ft	No; no	No; offal buried	Yes	No	None.
No	Wells, 20 ft	No; no	None	No	No	None.
No	Wells	No; no	No	No	No	None.
No	Wells, 30 ft.	No	None	No	No	None.
No	Wells, 15 to 20 ft.	No; no	None	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Draper	.....	None	No; no hospital.	.....	.....	No
Dumfries, S	Yes; yes.	Diphtheria, 1; tuberculosis, 2.	Yes; no hospital	Yes	Yes, in diphtheria cases	Yes; no
Day Mills	No	None	.....	.....	.....	No
Dummer	Action taken on complaint	Tuberculosis, 2.	No hospital	No	Yes	No
Drummond	Only when complaint is made.	None	Placard the houses; no hospital.	Don't know.	No, no	No; no
Dunn	On complaint.	None	No hospital	Yes; results good.	No	No; no
Dalhousie and N. Sherbrooke.	On complaint.	Tuberculosis, 1.	Yes; no hospital	Yes; good results	Yes	No; no
Delaware	Yes	.. ..	Yes; no	Yes: yes ..	No ...	Yes
Dumfries, N	Inspection once a year.	Tuberculosis, 1.	Yes; no	Yes; yes ..	Yes	No; no
Derby	Yes	.....	Yes; no	.....	Yes	No
Dawn	On complaint.	Tuberculosis, 3.	Yes; no	Yes	Yes	No ...
Douro	At intervals..	Tuberculosis, 4.	Yes; no	Yes	Yes	No: no
Dorchester, N	At intervals..	Diphtheria, 1 ..	Yes; no	Yes; yes ..	Yes	No; no
Dysart	When necessary.	.....	Yes; no	No occasion.	Yes	No; no ...
Darlington	Yes; yes	Scarlatina, 1; typhoid, 4; tuberculosis, 2.	Fairly well	Yes; yes ..	Yes .	No; no
Elderslie	Yes; yes	None	Yes; no hospital	Used in some cases.	Yes	Yes; no ...
Easthope, S	On complaint	None	Left to physicians.	Don't know.	No, under doctor in attendance	No; no
Ellice	On complaint.	Diphtheria, 1; typhoid, 1; tuberculosis, 1.	No; house placarded.	Yes; good results.	Yes	No; no
Elmsley, S	No; action on complaint	Tuberculosis, 1.	No; no hospital.	Yes; no cases in Tp	No	No; no
Egermont	On complaint.	Tuberculosis, 3..	Yes; dwelling placarded.	Yes	Yes	No; no
Emily	Only on complaint	Diphtheria, 1...	Yes; placarding house; no hospital.	Can't say ..	No	No; no

TOWNSHIPS.—*Continued*.

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act. How licensed and regulated.
No	Wells	No cases of tuberculosis.	None	No	No	None.
Yes	Wells and springs.	Yes	Yes; yes	No	No	None.
	Wells	No	None	No	No	None.
Yes	Wells, 15 to 20 ft.	No	None	No	No	None.
Yes	Wells, 50 ft	No	No; offal fed to hogs; no inspection of carcasses.	No	No	None.
Yes	Wells and cisterns, 10 to 25 ft.	No	None in township.	No	No	None.
No	Wells and springs, 10 to 20 ft.	No; no; no	None in township.	No	No	None.
Yes	Wells, 20 ft	No; no	No; offal fed to hogs.	No	No	None.
No	Wells and springs.	Yes; no cases	Yes; fed to hogs; no.	No	No	None.
No	Wells and springs.		No	No	No	None.
No	Wells, 20 ft	No; some cases have occurred.	No	No	No	None.
No	Wells, 20 ft	No; no; no	None	No	No	None.
No	Wells	No; no	No; fed to hogs; no.	No	No	None.
No	Wells	No; no	None	No	No	None.
No	Wells, 20 ft	No; no	No; fed to hogs; no.	No	No	No.
No	Wells, 36 to 45 feet.	No; no cases of tuberculosis.	None in township.			None.
Yes	Wells, about 24 ft.	No	Not licensed; fed to pigs.	No system.	No	None.
Yes	Wells, 25 to 100 ft.	No; no	Yes; buried; don't know.	No system.	No	None.
No	Wells, 20 to 40 ft.	No; no	Not licensed; buried.	No	No	None.
Yes	Wells, 20 ft	No	None in township.	No	No	None.
Yes	Surface wells, 20 to 30 ft.	No; none	None in township.	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out. Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Ernesttown	At intervals and on complaint.	Tuberculosis, 3..	Yes, in houses; no hospital.	Yes; successful when used early.	Yes	No; no ....
Edwardsburgh..	On complaint.	.. ..	Yes; no hospital	Yes; results good.	No	No .....
Elmsley, N.....	On complaint.	.....	Yes; no.....	Yes; yes...	Yes	No; no ....
Eramosa	On complaint.	....	Yes; no.....	Yes; yes...	Yes	No; no ....
Essa	....	Scarlatina, 1....	Yes; no.....	No occasion.	Yes	No; no ....
Ennismore	On complaint.	.....	No; no	No	No	No; no ....
Ekfrid	On complaint.	Typhoid, 1	Yes; no	Yes	Yes	No; no ....
Elma	At intervals ..	Typhoid, 2	Yes	Yes; yes...	Yes	No; no ....
Esquesing	On complaint.	.....	Yes..... ...	Yes; yes...	Yes	Yes .....
Erin	On complaint.	. .. .	Yes; no.....	No	Yes	Yes .....
Enniskillen.....	At intervals ..	Tuberculosis, 6 .	Not always	Yes	Yes; in some cases.	No .....
Eldon	On complaint.	Tuberculosis, 3 .	No; no	Yes	No	No; no ....
Fredricksburg, S	Yes; yes	Tuberculosis, 2 .	Yes; no hospital	Yes	Yes	Yes; yes...
Faraday	Annually, in the spring.	Diphtheria, 1; tuberculosis, 1.	Yes, by placarding.	No	Yes	No; no ....
Flamboro, E....	....	Tuberculosis, 1 .	Yes	Yes; yes...	Yes	No; no ....
Fullerton	Once each year	.....	Yes; no.....	Yes; Yes ..	Yes	Yes; no ...
Fenelon	On complaint.	....	No, only in diphtheria cases.	Yes	No	No; no ....
Floss.....	On complaint.	Tuberculosis, 5 .	Generally	Sometimes..	Yes	No; no ....
Galway, etc	No	....	No	Don't know.	Yes	No .....
Glenelg	On complaint.	Tuberculosis, 5 .	Yes	..... .	Yes	No .....
Greenock	General inspection.	Tuberculosis, 1 .	Yes; no.....	Yes; yes...	Yes	Yes .....
Glanford	On complaint.	Diphtheria, 2; tuberculosis, 1	Generally	Yes; yes...	Yes	No; no ....
Gwillimbury, E.	On complaint.	Tuberculosis, 4; diphtheria, 1.	Yes; no	Yes; yes...	Yes	No; no ....
Georgina	When complaint is made.	None	Yes.....	No	Yes	No; no ....
Gloucester	General inspection.	.. ..	Yes; no.....	....	Yes	.....

TOWNSHIPS.—*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum?	Is there systematic inspection of dairy cows? Have cases of tuberculois occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by an officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72 Public Health Act. How licensed and regulated.
Yes	Wells, 15 ft	No; no; no	Yes; fed to hogs; no.	No	No	None.
No	Wells, 10 to 80 ft.	No	Not licensed	No	No	None.
No	No	No; no	No		No	None.
Yes	Wells	No; no	No; boiling; no	No	No	None.
No	Wells and springs.	No; none	No	Yes	No	None.
No	Wells, 40 ft	No; no; no	None	No	No	None.
Yes	Wells, 100 to 150 ft.	No	No	No	No	None.
No	Wells	No	No; offal boiled and fed to hogs	No	No	None.
No	Wells	No		No	No	None.
	Wells	No	No	No	No	None.
Yes	Artesian wells	No	No; offal fed to hogs.	Yes	No	Petroleum refinery, etc.
No	Wells, 50 ft	No	No	No	No	None.
Yes	Wells, various depths.	Yes	None in township.	Yes	No	None.
No	Wells, 10 to 60 ft.	No; no tuberculosis.	None	No	No	None.
Yes	Wells, 35 ft	Yes; no	No; offal destroyed; no.	No	No	None.
No	Wells	No; no	No; fed to hogs.	No	No	None.
No	Wells, 15 to 20 ft.	No	No; fed to hogs; no.	No	No	None.
No	Wells, 12 to 100 ft.	No	No	No	No	None.
No	Don t know	No	None	No	No	None.
Yes	Wells and springs.	No dairies	None	No	No	None.
Yes	Wells, 20 ft	No	Yes; offal buried	No	No	None.
Yes	Wells, 15 to 100 ft.	Yes; no	No; offal fed to hogs.	No	No	None.
Physicians only.	Wells, 30 ft	No	No; buried or fed to hogs.	No	No	None.
No	Wells	No; no	No	No	No	None.
	Wells			No	Yes	Piggeries.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Gower, N	No; action on complaint.	Diphtheria 1; tuberculosis 5.	No; no hospital.	Yes; 2 cases treated, with 1 death	No	No; no.....
Gower, S.	On complaint.	Tuberculosis 3.	No	Don't know.	No	No; no.....
Griffith and Mattawachan.	When complaint is made.	None	Yes	Yes.	Yes.	No; no.....
Grattan	No; No only on complaint	Scarlatina 1	No	Yes.	Yes.	No; no.....
Garafraxa, W...	Yes; Schools yearly.	.....	Yes; patient placed in upper room.	Yes; not required this year.	No	Yes; no ....
Goulbourn.....	On complaint.	None	Yes; no hospital	Yes; results good.	Yes.	No; no.....
Guelph.....	When complaints are made.	Typhoid 1; tuberculosis 3.	Yes	Yes; good results.	Yes.	Yes.....
Grimsby, S.....	On complaint.	None	Yes	Not required this year.	Yes.	No; no.....
Gordon	No; No	None	No	No	No	No .....
Gwillimbury, N.	No	Diphtheria 1; tuberculosis 3.	Yes.	Yes; said to be good.	Yes.	No .....
Gwillimbury, W.	Only on complaint.	None	.....	.....	.....	No; no.....
Grey.	Yes	None	Yes; no hospital	Yes.	Sometimes .	Yes; no....
Gosfield, N.....	Only on complaint.	None	Yes; quarantine.	Yes; most satisfactory.	Yes.	Yes; no....
Gosfield, S	.....	.....	.....	.....	.....	.....
Grantham.....	On complaint.	Tuberculosis 1 ..	Yes.	Don't know.	No	No; no.....
Goderich	When complaint is made.	None	Not necessary ..	Don't know.	No	No; no.....
Gainsboro	On complaint.	.....	No	No	No	No; no.....
Glanmorgan ...	On complaint.	.....	Generally	No	Yes.	No; no.....
Garafraxa, E...	General inspection.	.....	No	No	No	No; no.....
Hawkesbury, E.	On complaint.	Scarlatina 1; typhoid 2; tuberculosis 7.	Yes.	Yes, very good.	Yes.	No .....

TOWNSHIPS.—*Continued.*

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72 Public Health Act. How licensed and regulated.
No	Wells, 15 feet	No; no test for tuberculosis.	No; no	No	No; no	None.
No		No; don't know	None in tp	No	No	None.
No	Springs	No	None in tp	No	No	None.
No	Wells, 10 to 12 feet.	No; no	Not licensed; no inspection of carcasses.	No	No	None.
Yes	Wells, 15 feet	No dairy here	Not licensed; offal buried; no.	No	No	None.
No	Wells	No	None in tp.	No	No	None.
Physicians only.	Wells, average 6 feet.	No systematic inspection.	No; inspected; offal boiled and fed to hogs.	Yes.	No	None.
Yes	Wells, 12 to 30 feet.	No; no	None in tp.	Yes.	No	None.
No	Wells, 12 to 20 feet.	No	None in tp.	No	No	None.
No	Wells	No	None in tp.	No	No	None.
No	Wells, 20 to 50 feet.	No; no	None in tp.	No	No	None.
No	Wells, 12 to 16 feet.	No	No; but are inspected.	No	No	None.
No	Artesian wells	No; no; no	Yes; no	No	No	None.
No	Wells	No; no; not tested.	Not licensed	No	No	None.
No	Wells, 20 to 25 feet.	No	No; don't know.	No	No	None.
No	Wells, 25 feet	No; no	No	No	No	None.
No	Wells, 20 feet	No; no	None	No	No	None.
No	Wells, 25 feet	No	None	No	No	None.
Yes	Wells, 10 to 30 feet.	No	No; offal buried; no inspection.	Yes.	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children, vaccinated?
Hamilton.....	On complaint.	Diphtheria 1; typhoid 1; tuberculosis 1.	Yes; no hospital	Yes.	Yes	Yes .....
Huron	Yes; Yes	Tuberculosis 4 ..	Yes.	No occasion to use it.	Not always.	No; no.....
Hullett	Acton on complaint.	Tuberculosis 5 ..	No hospital.....	Yes; no cases this year.	Yes..... .	No; no.....
Hillier	No; No; Yes.	Typhoid 1	No	Yes.	Yes.....	No .....
Hilton	When complaint is made.	Tuberculosis 1 ..	Yes.	No cases ...	.....	No .....
Harvey	Yes, annually	Tuberculosis, 1 .	Yes, no hospital	No cases ...	Yes.....	No .....
Hallam	.....	None	Houses plac'rded	Yes; successful.	Yes.....	No ....
Head, Clara and Maria.	No; No	None	Yes.	.....	Yes.....	.....
Humberstone ..	Yes; Yes	Tuberculosis 1 ..	Yes.	Yes.	Not always.	No .....
Huntingdon	When complaint is made.	Tuberculosis 3 ..	Yes; house placarded.	Yes; satisfactory.	No; physician in attendance does it.	No; no.....
Hinchinbrooke..	No; No; Yes..	Diphtheria 1; tuberculosis 2.	No; none; none.	Yes; satisfactory.	No.	No; no.....
Haldimand	Action on complaint.	Typhoid 4, tuberculosis 3....	Yes, in private houses.....	Some use it.	No	No; no.....
Hallowell	At intervals ..	Typhoid, 2; diphtheria, 1.	Yes.	.....	No	No; no.....
Huntley.....	On complaint.	....	Yes; no.....	Yes; yes....	Yes	.....
Horton	No; No; Yes..	Tuberculosis, 1..	Yes; no.....	Yes; yes....	Yes	No; no.....
Hay	Schools and slaughter houses are.	Diphtheria, 1; tuberculosis, 7.	Yes.	Yes; yes....	Yes	Yes; no....
Houghton	On complaint.	None.....	Yes; no	Don't know.	No	No; no.....
Innisfil	On complaint.	Scarlatina, 1; tuberculosis, 1.	Yes.	Yes.	Not all cases	No .....
Jocelyn	No	None.....	Not required ...	No	No	No; no.....
Kennebec	.....	Diphtheria, 2; typhoid, 1.	Yes.	Yes; good results.	Yes.....	No; no.....
Kingston	On complaint.	None.....	Don't know	No diseases.	No	No .....
Kinloss	On complaint only.	Tuberculosis, 4..	No	No; occasionally used.	Yes.....	No; no.....
Keppel	Yes; Yes....	Tuberculosis, 1..	Yes, in houses..	Yes.	Yes	No; no.....

TOWNSHIPS.—*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72, Public Health Act. How licens'd and regulated.
No	Wells, 18 to 30 feet.	Yes ; no ; no.....	Yes; offal buried; no inspection.	No	No	None.
M. H. O. only.	Wells, about 25 feet.	No ; yes, one; no..	Yes; offal buried; no.	No	No	None.
No	Wells, 20 feet ..	No ; no test used..	No	No	No	None.
Yes	Wells, 20 feet ..	No ; no	No	No	No	None.
No	Springs	.. ..	None	No	No	None.
M. H. O. only.	Wells, 14 feet ..	No; no;no	None in tp.	No	No	None.
Yes	Wells, 15 feet ..	No	No	No	No	None.
.....	Springs	No	None in tp.	No	No	None.
No	Wells, 15 to 100 feet.	No tuberculosis ..	No; offal buried.	Yes.	No	1 hide packing house.
No	Wells	No ; no	No ; in sanitary condition.	No	No	None.
No	Wells, 10 feet ..	No ; no ; no.....	None in tp.	No	No	None.
Yes	Wells, 30 feet ..	No ; no ; no.....	No ; fed to hogs; no.	No	No	None.
No	Wells	.....	....	.....	No	None.
.....	Wells	....	....	No	.....	.....
No	Wells	No ; no	None	No	No	None.
No	Wells, 40 feet .	Yes ; no.....	No; buried; no..	No	No	None.
No	Wells, 40 feet ..	No ; no ; no	None	No	No	None.
Yes.	Wells, 20 to 50 feet.	No ; no cases reported.	No; fed to hogs.	No	No	None.
No	Wells, 15 to 125 feet.	No ; no ; no	None in tp.	No	No	None.
No	Wells, 12 to 20 feet.	No ; no	None in tp.	No	No	None.
No	Wells, 8 feet....	No ; no	None in tp.	No	No	None.
No	Wells	No ; tuberculin has been used.	None in tp.	No	No	None.
Yes	.....	No ; no	No; buried; no..	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection. Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases, number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Kincardine	On complaint.	Scarlatina, 1; typhoid, 3; tuberculosis, 3.	Yes.	No	Yes	No; no . ..
Leeds & Land. Front	On complaint.	....	No	Yes, good results ...	No	No .....
Lavant	No inspection.	.....	No	No	No	No .....
Lobo	On complaint.	Typhoid 1; tuberculosis 2.	Yes.....	No occasion.	Yes	No .....
Limerick	No	None	No..... ...	No	No.....	No .....
Laird	On complaint.	Tuberculosis 1..	No	No	No	No .....
London	On complaint.	Tuberculosis 7..	No; No	Yes; Yes ..	No	No .....
Lancaster	On complaint.	Tuberculosis 4..	Yes; No	No	Yes	No; No ....
Lanark	General Inspection.	Tuberculosis 3..	Yes; No	Yes; Yes ..	Under direction of M. H. O.	No; No ....
Lindsay & St. E.	On complaint.	None.....	None...	None	Yes.....	....
Laxton, D. & L.	At intervals ..	None.....	Yes; No	Yes; Yes ..	Yes	No; No ...
Luther, W	No; No	Diphtheria 1....	Yes; No	Yes; Yes..	Yes	No; No ....
Luther E.....	Yes; Yes	Typhoid 1; tuberculosis 4.	Yes; No	Yes; Yes..	Yes	No; No ....
Logan	General Inspection	Diphtheria 1; tuberculosis 5.	No	.....	Yes	.....
Monaghan, N...	Yes	Tuberculosis, 1.	Yes	....	Yes.....	No; no ....
Minden.....	On complaint.	None.....	Yes	Yes.....	No...	No.....
Malden.	On complaint.	.....	Yes; no hospital	Yes	It is in small pox cases.	No.....
Minto.....	On complaint.	None.....	Yes	No.....	No.....	No..... .
Melancthon.....	On complaint.	Tuberculosis, 1.	Yes; no hospital	Yes; results good.	No.....	Yes .....
Moulton	No; on complaint.	Tuberculosis, 2..	Yes; no hospital	Don't know.	Yes	No; no ....
Matchedash	On complaint.	None..... ...	No cases.....	Not required	When necessary.	Yes .....
Madoc.....	On complaint.	None.....	Yes; no hospital	Yes; satisfactory.	No; left to physicians.	No; no ....
Marysburg, S...	On complaint.	Tuberculosis, 2.	Yes; no hospital	Yes; satisfactory.	Yes; M.H.O attends to it	No; no ....
Marysburg, N..	At intervals..	Tuberculosis, 2.	Yes; no hospital	Don't know.	Yes	No; no ....

TOWNSHIPS —*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act. How licensed and regulated.
Yes	Wells	No	No ; fed to hogs ; no.	No	No	None.
No	Wells, 16 ft . .	No	Not licensed....	No	No	None .....
No	Spring water ...	No	No	No	No	None .....
No	Wells, 12 to 75 ft.	No ; No	None in Tp.....	No	No	None .....
No	Springs	No	None in Tp.....	No	No	None .....
No	Surface water ..	No	None in Tp.....	No	No	None .....
No	Springs and wells 40 ft.	No	Yes ; fed to pigs ; No.	No	No	Bone boiling
No	Wells, 20 ft.	No ; No.....	Don't know	No	No	None .....
No	Wells and springs.	No ; one herd examined by Inspector ; No.	None	No	No	None .....
.....	....	None	None	No	No	None .....
Yes	Wells and springs.	No ; No ; No	None	No	No	None .....
Physicians only.	Wells	No	None	No	No	None .....
No	Wells, 40 ft.....	No	No ; buried ; No.	No	No	None .....
.....	Wells	No	.....	No	No	None .....
No.....	Wells, 18 to 20 ft.	No ; no ; no	Yes ; boiled	No	No	None.
No.....	Springs and wells.	No ; no.	None in tp ...	No	No	None.
No.....	Wells 75 to 100 ft.	No ; no.....	No ; offal fed to hogs.	No	No	None.
M.H.O. only	Wells, 20 to 25 ft.	No ; none	Yes ; fed to hogs	No	No	None.
M.H.O. only	Wells, 20 to 100 ft.	No.....	No	No	No	None,
No.....	Wells, 6 to 16 ft.	No ; no.....	No ; No.....	No	No	None.
No.....	Wells, about 16 ft.	No ; no ; no inspection.	None in tp.....	No	No	None.
No.....	Wells	No ; don't know ..	None in tp.....	No	No	None.
No.....	Wells, 40 to 50 ft.	No ; none	None in tp	No	No	None.
No.	Wells, 20 ft.....	No.....	None in tp.	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Marlborough ...	On complaint	Tuberculosis, 1.	Yes; no hospital	Not required	No.....	No; no ....
Monmouth	No; yes.....	Tuberculosis, 1.	Yes; no hospital	No cases....	No.....	No; no ....
Medora and Wood	.....	Tuberculosis, 1.	No; no hospital	No.....	Always	Yes; no....
Monck	On complaint.	None.....	Yes; no hospital	. . . .	By attendi'g physician.	No..... ...
Maidstone	On complaint.	....	Not always.....	Don't know.	Yes	No.....
Marmora and Lake	On complaint.	.....	....	Yes; yes...	.....	No; no ....
Mariposa.	Yes; yes.....	Diphtheria, 3; tuberculosis, 6.	Yes; no	Yes; yes...	Yes	Yes; no....
Macdonald, M. and A.	....	.....	No.....	No..... ..	No.....	No.....
Muskoka.	On complaint.	....	Yes	Yes	Yes	No.....
Mono	On complaint.	Typhoid, 1; tuberculosis, 3.	No; no..... ...	Don't know.	No.....	No.....
Macaulay.....	On complaint.	.....	Yes; no.....	Don't know.	Yes	No.....
Mara	On complaint.	Diphtheria, 1...	Yes; no.....	Yes; yes...	Yes	No; no ....
McMurrich.....	General inspection.	....	.....	.....	Yes	
Medonte.....	On complaint.	.....	Yes; no	Yes	Not always.	No; no ....
Metcalfe.....	Once a year...	Typhoid, 1.....	Yes; no.....	Yes	Yes	Yes; no....
March	On complaint.	....	Yes; no.....	Yes; yes...	No.....	No; no ....
Middleton	At intervals ..	.....	Yes; no.....	.. ..	Yes	No. .... ..
Mersea.....	On complaint.	Diphtheria, 1; typhoid, 3; tuberculosis, 3.	Yes; no.....	Yes; yes...	Yes	No.....
Mornington	General inspection.	Typhoid, 1; tuberculosis, 3.	Yes; no	Yes	Yes	No; no ..
Murry..... .	Yes; yes.....	None.....	Yes	Yes; yes ..	Yes	No.....
Manvers.....	On complaint.	.....	Yes; no.....	No.....	Yes	No; no ....
Mayo.....	On complaint.	Tuberculosis, 1.	No.....	No.....	....	No..... .
McNab	General inspection.	Diphtheria, 1; tuberculosis, 3.	Yes; no.....	Yes; yes...	Yes	No; no ....
McKillop	General inspection.	Tuberculosis, 1.	....	Don't know.	No.....	No.....

TOWNSHIPS.—*Continued*

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewage system?	State No. and kind of noxious trades. See Sec. 72, Public Health Act. How licensed and regulated.
No	Wells, 20 to 25 ft.	No; no	None in tp.	No	No	None.
No	Wells and streams.	No; no	None in tp.	No	No	None.
No	Lake water generally.	No; no	Not licensed offal buried.	No	No	None.
No	Wells, 10 to 20 ft.	No; no.	Only 1 in tp	Well as possible.	No	None.
Yes	Wells and springs.	No; no; no	No	No	No	None.
No	Wells, 40 ft	No.	No	No	No	None.
Yes	Wells, 20 ft	No; no; no	No; fed to hogs.	No	No	None.
No	Springs.	No	None	No	No	None.
No.	Wells, 20 ft.	No inspection.	No; No	No	No	None.
No.	Wells, 20 ft.	No; no.	No; fed to hogs.	No	No	None.
No	Wells	No dairy	None	No	No	None.
No	Wells and springs.	No; no.	No; buried; no.	No	No	None.
	Wells and springs.		None	No	No	None.
Yes	Wells and springs.	No; no.	No	No	No	None.
No	Wells	No	None	No	No	None.
Yes	Wells and springs.	Not always.	None	No	No	None.
Yes	Wells and springs.			No	No	None.
Yes	Wells, 10 to 20 ft.	No; no.	No; offal buried.	No	No	None.
Yes	Wells. 25 ft.	No	No; offal burned; no.	No	No	None.
Yes	Wells	No	Yes; buried; no	No	No	Slaughter houses.
No	Wells and springs.	No; no.	No; no	No	No	None.
No	Wells and springs.	No	No	No	No	None.
Yes	Spring and wells, 12 ft.	Yes; no	No; buried	No	No	None.
Yes	Wells, 30 ft.	No	None	At school houses.	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
McLean and R.	Once a year..	....	Yes; no.. . .	No occasion to use it.	Yes	Yes .....
Normandy	Yes; yes.....	Diphtheria, 1; typhoid, 1; tuberculosis, 2.	Yes; no hospital.	Yes; results good.	Yes, by M. H. O.	No; no ....
Nichol	No; when complaint is made	Typhoid, 1; tuberculosis, 3.	Yes; house placarded.	No	Yes	No; no ....
Nissouri, W....	Yes; yes.....	Scarlatina, 3; tuberculosis, 3.	Yes; no hospital.	Yes; satisfactory.	Yes	No; no ....
Nepean	No; on complaint.	Diphtheria, 5...	Yes; as far as possible.	Generally used; good.	Yes	No; no ....
Norwich N.	Yes	.....	Yes	Yes; yes...	Yes	Yes; no ...
Nottawasaga ...	On complaint.	Typhoid, 1.	.....	No	No	No; no ....
Nissouri, E.....	On complaint.	Typhoid, 2	Yes; no.....	Yes; yes ..	Yes	No; no ....
Oso	No; no; on complaint.	None	Yes; no hospital.	Yes; good.	Yes	Yes; no....
Ops	Yes; yes ...	Tuberculosis, 2..	Yes; no hospital.	Yes; yes...	Yes	Yes .....
Oakley	On complaint.	Tuberculosis, 1..	Not required ...	No	No	No .....
Otonabee.....	On complaint.	Tuberculosis, 4..	.....	No	In some cases	No; no ....
Oro	On complaint.	None	Yes	Yes	Usually .. .	No; no ....
Oakland.....	On complaint.	Tuberculosis, 1..	No; no	.....	Yes, by M. H. O.	No ....
Orford	On complaint.	Typhoid, 1; tuberculosis, 3.	By placarding premises; no.	.....	Doctors attend to it.	No; no ....
Oxford	No	None	No	No	No	No .....
Oxford, E	Yes; yes.....	Scarlet fever, 1; tuberculosis, 2.	Yes; by placarding.	Yes; results good.	No	Yes; no....
Oxford, W. ...	When complaint is made	....	Yes; no.....	Yes; yes...	Yes	Yes; no....
Oxford, N. ...	General inspection.	....	Yes; no.....	.....	Yes	Yes ... ..
Orillia.....	On complaint.	Scarlatina, 1; tuberculosis, 9.	Yes; no.....	Yes; yes .	Yes	No; no ....
Osnabruck	On complaint.	Tuberculosis, 14.	No	No	Yes	No .....
Puslinch	Twice yearly..	None	House placarded; no hospital	No	Yes	No; no ....
Plympton	On complaint.	Diphtheria, 1; typhoid, 1.	Yes; no hospital.	No	No, done by attending physician.	No; no ....
Petewawa.. ...	....	None	No	Yes	Yes	Yes; no....

TOWNSHIPS.—*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officers of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72 Public Health Act. How licensed and regulated.
No.	Wells, 20 ft.....	No ; no.....	No ; buried ...	It is removed	No	None.
Yes	Wells & springs.	No dairy cows ; no tuberculosis.	Only one in Tp..	House-holders look after their own.	No	None.
No	Wells.....	No ; can't say	Yes ; yes ; no ..	No	No	None.
Yes	Wells, 20 ft....	No ; none	Yes ; by boiling ; no.	No	No	None.
Yes	Wells ; varies greatly.	Yes ; no	Yes ; offal used as fertilizer.	Yes	No	None.
.....	Wells ; 35 ft....	No	Yes ; no.....	No	.....	None.
No	Wells	No ; none	None	No	No	None.
.....	.....	No	No	No	No	None.
Yes	Springs	No ; no	None in Tp.....	Yes	No	None.
....	Wells ; 10 to 60 ft.	No tuberculosis ..	Yes ; offal fed to pigs.	No	No	None.
No	Springs	No ; no	None in Tp.....	No	No	None.
No	Wells ; 18 ft....	No	Offal fed to hogs.	No	No	None.
No	Wells , 12 to 100 ft.	No	No ; fed to hogs.	No	No	None.
.....	Wells ; 20 ft....	No	No ; fed to hogs.	No	No	None.
No	Wells	No ; no ; none reported:	No	No	No	None.
No	Wells ; 20 ft....	No	None in Tp.....	No	No	None.
No	Wells	No ; no tuberculosis reported.	No ; offal fed to hogs.	No	No	None.
No	Wells	No ; no	No ; no	No	No	Sewage from Woodstock.
No	Wells	No ; no	No	No	No	None.
No	Wells ; 35 ft....	No ; none	No ; buried	No	Nc	None.
Yes	Wells ; 30 ft....	No ; no	None	No	No	None.
No	Wells ; 10 to 70 ft.	No ; no tuberculosis.	Yes	....	.....	None.
M.H.O. and all physicians get them.	Wells ; 12 to 30 ft.	No ; fed to hogs and burned.	No	No	No	None.
No	Wells ; 16 ft....	No ; no dairy cows	None in Tp	No	No	None

TOWNSHIPS —*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria antitoxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Pembroke	On complaint.		Yes	Yes; yes	No	No; no
Plantagenet, N.	Occasionally	Scarlatina, 2; tuberculosis, 9.	Yes; no	Yes; yes	Yes	No; no
Palmerston, etc.	On complaint.	Tuberculosis, 1.	Yes	Don't know.	Yes	No
Pelham	General inspection		Yes		Yes	No
Percy	General inspection.	Tuberculosis, 1.	Yes; no	Yes	Yes	Yes; no
Pickering	Yes; yes	Scarlatina, 2; diphtheria, 5; typhoid, 1; tuberculosis, 8.	Yes; no	No	Yes	Yes; no
Radcliffe and Raglan.	No	None	No	No	Yes	
Rayside	On complaint.	None	No	No	No	No
Ryde	On complaint.	None	Yes; no hospital		Yes	No; no
Rolph B. and Wylie.	On complaint.	Tuberculosis, 1.	No	No	No	No
Raleigh	On complaint.	Tuberculosis, 8.	Yes, placarded; no hospital.	No, used by some; results good.	No	No
Rainham	Don't know	Tuberculosis, 2.	Yes; no hospital	Yes	Yes	No
Reach		Typhoid, 3; tuberculosis, 7.	Only when reported.	Yes; yes	Yes	Yes; no
Ross	Yes; twice yearly.		Yes; no	Yes; yes	Yes	No; no
Rama	On complaint.		Yes; no	None this year.	Yes	No
Richmond	On complaint.	Tuberculosis, 4.	Yes	Yes; yes	Yes	No
Sandfield	No; no	None		Don't know.		No; no
Sherbrooke, S.	On complaint.	Tuberculosis, 1.	Yes	No	Yes	No; no
Seneca	General inspection.	Tuberculosis, 3.	Yes; no hospital	Yes	Under doctor in attendance.	No; no
Sophiasburg	On complaint.	None	House placarded; no hospital	Think not	Yes, doctor in attendance.	No; no
Sydenham	On complaint.	None	Yes	No	Yes	No; no
Sebastopol	No	None	No	No	No	No

TOWNSHIPS.—*Continued*

Are forms for notification supplied to teachers and M.H.O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72, Public Health Act How licensed and regulated.
No	Wells	No; no	No	No	No	None.
No	Springs & wells.	No	No	No	No	None.
No	Wells; 16 to 30 ft.	No	No	No	No	None.
Yes	Wells	No				
No	Wells	No	No; offal fed to hogs.	No	No	None.
Yes	Wells; 12 to 80 ft.	No; no	Yes; buried; no.	No	No	None.
		No	None in Tp	No	No	None.
No	Wells; 16 to 40 ft.	No; no tuberculosis.	None in Tp	No	No	None.
No	Wells; 30 ft	No	None	No	No	None.
No		No	None in Tp	No	No	None.
No	Artesian wells; 9 to 100 ft.	No; no	No; buried no inspection.	No	No	None.
No	Wells; 20 ft.	No	None in Tp	No	No	None.
No	Wells; 20 to 50 ft.	No	No; but kept in good order; no	No	No	None.
No	Wells; 15 ft.	No	None	No	No	None.
No	Wells; 15 ft.	No; no	No; offal fed to hogs.	No	No	None.
Yes	Wells; 20 ft	No; no	None	No	No	None.
No	Wells & streams.	No; no	None in Tp	No	No	None.
No	Wells; 10 to 20 ft.	No inspection	None in Tp	No	No	None.
Yes	Wells, springs and cisterns.	No	No	Yes	No	None.
No	Wells; 20 ft.	No; no	No; don't know; no.	No	No	None.
Yes	Wells; 10 to 30 ft.	No; no; no	None in Tp	No	No	None.
No	Wells & springs.	No	None in Tp	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection of contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Scugog	On complaint.	None	Yes	No cases....	No	No .....
Stanhope	On complaint.	None	Yes	No cases....	Yes	No; no ...
Sullivan.	On complaint.	Diphtheria, 1; tuberculosis, 4.	Yes	Don't think so.	Yes	No .....
Sherbrooke	On complaint.	None	Yes; no hospital	Yes	Yes	No .....
Sunnidale	Yes : yes	....	Yes; no.....	Yes; yes...	By M. H. O.	Yes; no ....
Somerville	Yes; yes	.....	Yes	Don't know.	Yes	No .....
Sidney	....	Diphtheria, 1; tuberculosis, 4.	Yes; no.....	Yes; good.	Yes	Yes; no....
Sault Ste. Marie	On complaint.	....	Yes: no.....	.....	No	No .....
Stafford	On complaint.	Diphtheria, 1...	Yes; no	Yes; yes .	Yes	No ....
Stamford	At intervals ..	....	No; no	No	No	Yes .....
Sarnia	General inspection.	Tuberculosis, 2..	Yes; no	Don't know.	In some cases.	No .....
Saugeen.	Cheese factories, etc.	Tuberculosis, 2..	Yes; no	Yes.....	Yes	No .....
Saltfleet	At intervals..	Diphtheria, 1; typhoid, 7.	Yes; no	Yes; yes...	Yes	Yes; no....
Sarawak	General	None	Yes, in house...	Don't know.	Yes, by M. H. O.	Yes.....
Scott	On complaint.	Diphtheria, 1: typhoid, 1.	No	No	Yes	No .....
Southwold	General inspection.	Tuberculosis, 3..	Yes, by M.H.O.	No	Yes, by M. H. O.	Yes; no....
Stephen	When complaint is made.	Typhoid, 2; tuberculosis, 2.	Yes; no.....	Yes; yes...	Yes	No; no ....
St. Joseph.....	.....	None	.....	.....	.....	Yes; yes...
Thorah.....	On complaint.	Tuberculosis, 3..	Yes, placarding; no hospital.	Yes	Yes	No; no ....
Townsend	When ordered by the Board	Diphtheria 1; tuberculosis, 1.	No	Don't know.	Yes	No .....
Thessalon	On complaint.	Typhoid, 1; tuberculosis, 2.	Yes	No	No	No; no ....
Tay	On complaint.	Tuberculosis, 3..	No	Used sometimes.	No	No; no ....
Tehkummah ...	On complaint.	None	.....	.....	No	No; no ....
Thurlow	On complaint.	Scarlatina, 1; diphtheria, 1; tuberculosis, 10.	No	Don't know.	Don't know.	No .....

TOWNSHIPS —*Continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is these systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See sec. 72 Public Health Act. How licensed and regulated.
No	Wells; 20 to 40 ft.	No; no; no	None in Tp ...	No	No	None.
No	Wells; 20 to 40 ft.	No; no	None in Tp	No	No	None.
Yes	Wells; 10 to 30 ft.	No	Yes; no	.....	No	None.
No	Wells; 9 to 18 ft.	No; no	None in Tp	Yes	No	None.
Yes	Wells	No	No; destroyed; no.	No	No	None.
Yes	.....	No	No	No	No	None.
Yes	Wells	No; no	Yes; buried....	Yes	No	None.
No	Springs & wells.	No	None	No	No	None.
No	Wells; 20 ft....	No; no	None	No	No	None.
Yes	Wells; 30 ft....	Yes; no; yes	Yes; fed to hogs	No	No	None.
Yes	Wells	Yes; no	No; don't know	No	No	Slaughter house.
Yes	Saugeen River and wells	No; no; no.....	No; offal fed to hogs.	Yes	o	Slaughter-houses.
Yes	Wells; 20 ft....	Yes; no; no	No; used as fertilizer; no.	Yes	No	Slaughter houses.
Yes	Wells; 40 ft....	Yes; no cases	No	Yes	No	Slaughter houses.
No	.....	.....	.....	.....	.....	.....
No.	Wells; 20 ft....	Yes; no	No; boiled; no.	No	No	None.
Yes	Wells	No; no; no.....	No; fed to hogs.	No	No	None.
No	Wells	No	No; offal buried	.....	No	None.
No	Wells; average 25 ft.	Yes	Not licensed; buried; no.	No	No	None.
No	Wells	No	No	No	No	None.
No	Wells; 8 to 20 ft.	No; no; no.....	No; no	No	No	None.
No	Wells; 15 to 100 ft.	No; no	No; don't know; no.	.....	.....	None.
No	Wells	No	None in Tp.....	Yes	No	None.
No	Wells; 10 to 25 ft.	No; no; no.....	No; offal fed to hogs; no.	No	No	None.

TOWNSHIPS.—*Continued.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint.	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Tyendinaga	On complaint.	Tuberculo-is, 3..	No	Yes; good..	By doctor in attendance	No; no ....
Toronto Gore...	.....	None	No	Not in use..	No	No; no ...
Turnberry.....	On complaint.	Typhoid, 1	Placard; no hospital.	No cases ...	No	No; no ....
Tuckersmith ...	On complaint.	Diphtheria, 1; tuberculosis, 2.	....	Yes	Yes	No .....
Tecumseth	No.....	None	Don't know ...	No	No	No .....
Toronto	At intervals ..	Diphtheria, 1; tuberculosis, 2.	Yes	Yes	Not always.	Yes; no....
Tilbury, N	On complaint.	Typhoid, 2; tuberculosis, 1.	.....	.....	.....	.....
Uxbridge	On complaint.	Diphtheria, 3; tuberculosis, 3	Yes, by isolating patient.	Used several times; no.	Yes	No; no ....
Vespra	On complaint.	None	No	No	Yes	No; no ....
Westmeath	No	None	No	No	Yes	Yes .....
Wainfleet	On complaint.	Tuberculosis, 3..	Yes	Some used it; results good.	No	No; no ....
Walford.	On complaint.	Tuberculosis, 2..	Yes	Used sometimes.	Yes	No; no ....
Wilmot	Yes; yearly..	Diphtheria, 1...	Yes; no hospital	Yes when used early	Yes	No .....
Wallace	On complaint.	Tuberculosis, 2..	Yes	No	Not always.	No; no.....
Wawanosh, W..	On complaint.	Tuberculosis, 1..	Yes	Yes	Yes	No; no ....
Winchester. ...	.....	Diphtheria, 3; typhoid, 1; tuberculosis, 2.	Yes; no hospital	Yes	Yes	Yes no.....
Wilberforce and N. Algona.	No; on complaint.	Tuberculosis.4..	No; none	Yes; yes...	No	No; no.....
Woolwich	On complaint.	.....	Yes; yes	Yes; yes ..	Yes	Yes; yes...
Walsingham, S.	Yes	Typhoid, 1; tuberculosis, 2.	Yes	Yes; yes...	Yes	No; no.....
Whitchurch	.....	Diphtheria, 3; tuberculosis, 2.	Yes; no.....	Yes; good..	Yes	No; no.....
Waterloo.....	Yes	....	Yes	Yes	Yes	....
Watt	Yes	Diphtheria, 3...	Yes	....	....	....
Westminster ...	Yes	.....	Yes	....	Yes	Yes .....

TOWNSHIPS.—*continued.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72, Public Health Act. How licensed and regulated.
No	Wells & springs.	No; no; no.....	No; fed to pigs.	No	No	None.
Yes	Wells; 20 to 30 ft.	No; no; no	None in Tp.....	No	No	None.
When necessary.	Wells; average 25 ft.	No; no	No; fed to hogs; no.	No	No	No.
No	.....	.....	Inspected by the Board.	....	....	No.
No	Wells	No; no	No	.....	No	No.
.....	Wells	No	No, but in good condition.	No	No	None.
....	.....	.....	.....	.....	.....	None.
Yes	Wells; 12 to 120 ft.	No; no	None in Tp.....	No	No	None.
Yes	Wells; 30 to 130 ft.	No	No; yes.....	No	No	None.
No	Wells	No	None	No	No	None.
No	Wells; 10 to 20 ft.	No; no	No; no	No	No	None.
Yes	Wells; 15 to 40 ft.	No; no	None	No	No	None.
Yes to M. D's.	Wells & springs	No	No; buried; no.	No	No	None.
Yes	Wells	No	No; buried; no.	No	No	None.
.....	.....	No	Yes	.....	....	None.
Don't know.	Wells	Sometimes	No; buried; no.	No	No	None.
No	Wells	No; no	None	No	No	None.
Yes	Wells; 12 to 30 ft.	Yes	Yes	No	No	None.
No	.....	No	None	No	No	None.
.....	Wells; 10 to 30 ft.	No	No	No	No	None.
.....	Wells	No; tuberculin test used.	None	No	No	None.
.....	Wells	No	None	No	No	None.
Yes	Wells	No	None	No	No	None.

TOWNSHIPS.—*Concluded.*

Name of Municipality.	Is there general sanitary inspection? Is it repeated at intervals every year, or is action taken only on complaint?	Contagious diseases. Number of deaths.	Is isolation of contagious diseases systematically carried out? Does any isolation hospital exist?	Is diphtheria anti-toxine in common use by physicians? Are results satisfactory?	Is disinfection after contagious diseases carried out under the personal supervision of an officer of the Board?	Does the Board make inspection of public schools? Are new school children vaccinated?
Whitby, E.....	Action on complaint.	Typhoid, 3; tuberculosis, 1.	No	Don't know.	No	No; no.....
Wollaston	On complaint.	.....	Yes	.....	Yes	No .....
Willoughby	Yes; yes	.....	Yes; no...	Yes; yes...	Yes	No; no.....
York	Yes; yes	....	Yes; no hospital	No	Yes	Yes .. ...
Yonge & Escott Front.	Yes; yes	Diphtheria, 1; tuberculosis, 3.	No	No	Yes	No .....
Zorra, E	Yes; yes	Diphtheria, 3; tuberculosis, 8.	Yes	Yes	Yes	Yes .....
Zone	....	None	No	No	No	Yes; no....

TOWNSHIPS.—*Concluded.*

Are forms for notification supplied to teachers and M. H. O.?	Is there public water supply? If from wells give usual depth of water bearing stratum.	Is there systematic inspection of dairy cows? Have cases of tuberculosis occurred? and state whether tuberculin test has been used.	Are slaughter houses licensed? How is offal disposed of? Is there inspection of carcasses by any officer of the Board?	Is there systematic removal of garbage and night soil?	Is there a public sewerage system?	State No. and kind of noxious trades. See section 72, Public Health Act. How licensed and regulated?
No	Wells; 40 ft...	No; test used	No; buried	No	No	None.
No	Wells	No; no	None	Yes	No	None.
No	Wells; 18 ft....	No	No; fed to hogs.	No	No	None.
Yes	Wells	No; no	Yes	No	No	None.
No	Wells; 8 to 30 ft.	No	No	No	No	None.
Yes	Wells	No; yes.....	Yes; no inspection.	No	No	None.
No	Wells; 10 ft....	No	No; fed to hogs.	No	No	None.